# THE BUILDER

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### *Illustrations.*


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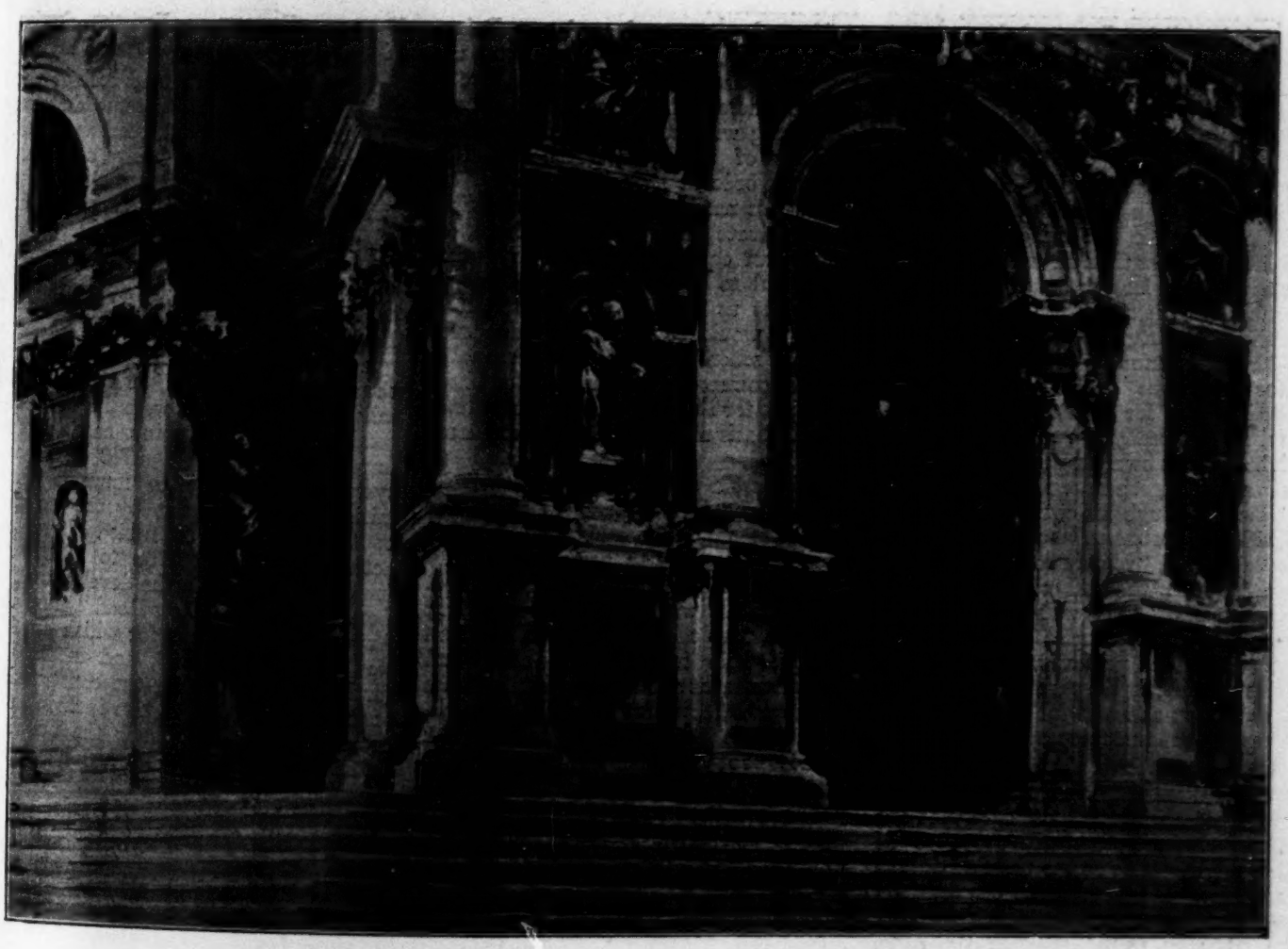
Church of S. Agnes, Kennington Park. The late George Gilbert Scott, Architect.

Holbeck Church, Leeds. The late G. F. Bodley, R.A., Architect.

Church of S. Bartholomew, Ipswich. Mr. Charles Spooner, F.R.I.B.A., Architect.

Brighton, Hove, and Sussex Grammar School: Selected Design. By Mr. S. B. Russell, F.R.I.B.A., Architect.

**Santa Maria Della Salute, Venice. By Mr. J. S. Sargent, R.A.** (*see page* 302).
(By permission of the Berlin Photographic Company, London, W.)

## THE ARTISTIC DEVELOPMENT OF LONDON.

"NEVER be backward in coming forward" is perhaps the moral we are intended to extract from the abbreviated version of the delightful little tale about Alexander the Great and Deinocrates, the architect, which Mr. Paul Waterhouse related so effectively in his interesting and timely paper on "The Artistic Development of London" at a recent meeting of the Institute.

If we venture to make any reference to this moral it is not to dispute its value—far from it. In this age of shrinking self-effacement it is a motto that we might all do well to pin up over our drawing-boards. Still less is it to question the perfect propriety of its application to the particular time and circumstance—quite the contrary. Conveying, as it did, so subtly and delicately to each one of the distinguished guests the flattering suggestion that in him the modern Deinocrates might find his Alexander, nothing could have been happier.

Rather would we suggest that another moral of equal, if not greater, value and pertinence to the subject might have been drawn from those details of the narrative which Mr. Waterhouse—rightly enough for his purpose—omitted to relate.

From Vitruvius we learn not only that Deinocrates disguised himself in a lion's skin, and took advantage of the sensation

he thus created to propose to Alexander to form Mount Athos into the statue of a man, but also that the statue should hold "a spacious city in his left hand, and in his right a huge vase, into which shall be collected all the streams of the mountain, which shall thence be poured into the sea." Further, we learn that "Alexander, delighted at the proposition, made immediate inquiry if the soil of the neighbourhood were of a quality capable of yielding sufficient produce for such a state." When, however, he found that all its supplies must be furnished by sea, he thus addressed Deinocrates: "I admire the grand outline of your scheme, and am well pleased with it; but I am of opinion he would be much to blame who planted a colony on such a spot. For, as an infant is nourished by the milk of its mother, depending thereon for its progress to maturity, so a city depends on the fertility of the country surrounding it for its riches, its strength in population, and not less for its defence against an enemy. Though your plan might be carried into execution, yet I think it impolitic. I nevertheless request your attendance on me that I may otherwise avail myself of your ingenuity." As Mr. Waterhouse puts it, "The King declined the design with thanks," at which we can hardly be surprised—except perhaps at the thanks.

Now it is just possible that some people may see in this engaging narrative a warning rather than an encouragement, an application for our especial benefit of the fable of the ass in the lion's skin—a particularly fortunate ass who happened to have the unusual good luck to bray before someone with the insight to perceive that, for all his foolish assumption, he was really a "man of dreadful might" in his own proper sphere. Anyone not altogether content to obtain "honour through his comely person and dignified deportment," but would prefer, like Vitruvius, "to gain some commendation through the aid of his scientific acquirements," may well think that an architect who so completely gave himself away covers his profession with ridicule, and is not exactly the person to be held up to us except as an awful example—even though he did make it pay in the end.

Be this as it may, the difficulty we see is that—if we may venture to say so—we cannot always be quite sure that our future administrators will prove to be Alexanders. This seems the flaw in the argument. They may have the common sense to reject an impossible scheme, and the courtesy to do so with the same dignified politeness, but they may lack the discernment to perceive the "man of dreadful might" behind it, who might have to submit to the same scathing rebuke without the consolatory and encouraging reference to future scope for his ingenuity.

When we find Mr. Waterhouse's most innocent suggestion that architects might well be employed in their own proper sphere, provoking remarks on "constitution building" by "an architectural layman," we see that this difficulty is not altogether imaginary.

"Let the cobbler stick to his last" is the moral that might have occurred to the audience had this anecdote been related in full.

Considering that our enthusiasm for the artistic development of London is perhaps liable at times to betray us into giving ourselves away in like manner by the suggestion of wild-cat schemes of similar, if less magnificent, folly, displaying the same lofty disregard for practical considerations, it might be as well to temper enthusiasm with discretion, and pin this motto up with the other.

We do not always sufficiently realise perhaps that schemes for the development of a city require the same solid basis of practical necessity upon which it was originally founded, and that this basis may involve social and economic questions on which, as architects, we are not necessarily experts. To pose as such is to assume the lion's skin.

From the sequel to our tale we should presume that the business of the architect is not so much to suggest impossible schemes simply for the sake of their possible artistic effect as to give artistic form and expression to ideas suggested by those better qualified to judge of their necessity.

Alexander, we read, and not Deinocrates, "having perceived a spot, at the same time naturally strong, the centre of the commerce of the country, a land abounding with corn, and having those facilities of transport which the Nile afforded, ordered Deinocrates to build a city whose name should be Alexandria."

As private individuals we have, of course, an equal right with any other individual to suggest ideas, and by all means let us exercise this right, but if we do it would be as well to make sure that our schemes have a more reasonable basis of common sense than the one here recorded, for ill-considered schemes without this basis may possibly do more harm than good.

It is just a question also whether the cobbler who is too ready to point out the holes in his neighbour's shoes is altogether a popular person. He may easily overdo it, and his action be resented. The difficulty with us moreover is that if we do take the trouble to indicate an obvious hole in the civic shoe, and demonstrate, at some trouble and expense to ourselves, how best it may be repaired, the public is just as likely as not to thank us most politely, and cobble it themselves. Then when the clumsy patchwork attracts public attention some inspired idiot is sure to add insult to injury by writing to the Press to deplore the sad lack of inspiration in the present generation of cobblers.

## THE LONDON TRAFFIC REPORT OF THE BOARD OF TRADE.

INTERESTING as were the two previous annual reports of the London Traffic Branch of the Board of Trade, this latest one surpasses them in several respects.

Both the investigations and the constructive proposals take a wider scope, and while we still retain the impression of a door only gradually opening on a problem with numberless ramifications and varied aspects, we can feel that the mere fact that this report includes concrete proposals, though they may be only tentative in general outline, brings us a step further towards a realisation of the needs of Greater London.

At an early stage of the work we are referred to Appendix H., which is one of the most valuable sections of the whole volume. This section, compiled by Mr. J. F. Ordish, deals with the "History of Metropolitan Roads," commencing with Roman London and terminating with the abandonment of the Turnpike system. As it forms the legitimate introduction to the study of the whole matter, we will consider this section first. It opens with a reference to the road survey, by John Ogilby, published in 1675, which gives eight main roads out of London which, with six branches in addition, can be identified as under—

| | | | | | |
|---|---|---|---|---|---|
| 1. | London | to | Aberystwyth | v'a | Acton and Uxbridge |
| 2. | ,, | ,, | Arundel | ,, | Clapham ,, Dorking |
| 3. | ,, | ,, | Berwick | ,, | Shoreditch ,, Ware |
| 4. | ,, | ,, | Bristol | ,, | Hounslow ,, Colnbrook |
| 5. | ,, | ,, | Buckingham | ,, | Uxbridge ,, Wendover |
| 6. | ,, | ,, | St. Davids | ,, | Colnbrook ,, Maidenhead |
| 7. | ,, | ,, | Dover | ,, | Southwark ,, Blackheath |
| 8. | ,, | ,, | Harwich | ,, | Mile End ,, Romford |
| 9. | ,, | ,, | Hythe | ,, | Southwark ,, Eltham |
| 10. | ,, | ,, | Holyhead | ,, | Aldersgate ,, Highgate |
| 11. | ,, | ,, | (Gt. Western-road) | ,, | Hounslow ,, Staines |
| 12. | ,, | ,, | Newhaven | ,, | Newington ,, Croydon |
| 13. | ,, | ,, | Portsmouth | ,, | Clapham ,, Kingston |
| 14. | ,, | ,, | Rye | ,, | New Cross ,, Bromley |

It will be seen that several of these roads are identical for some distances, but, on the other hand, there were other ways not reckoned by Ogilby, as the road to St. Albans (Edgware-road), and the King's private roads to Theobalds and to Fulham.

Many of these roads will be recognised as having the Roman routes as their basis, and, of course, the site of London Bridge, selected by the Romans, determined the position of the lines of those to the south. The roads, at the time this schedule was made, were in very bad condition, and in many cases almost impassable. Not till 1748 was any systematic attempt to improve them initiated, and, judging by the number of Turnpike Acts, the period of greatest activity was from 1760 to 1809. An important feature in the development of London was the "New Road" from the Angel to Marylebone, for which an Act was obtained in 1756, and in 1775 a further Act authorised the construction of the City-road, these Acts included the provision for setting back the building lines 50 ft. from the road, which has, after a number of appeals, been recently confirmed by the House of Lords.

A Standing Committee of the House of Commons recommended that Commissions of Highways should be appointed to exercise general supervision over the turnpike roads. This Committee also advised (in 1809) that main roads—

| | | | | | |
|---|---|---|---|---|---|
| Within | 200 | miles | of London | should be | 40 ft. wide. |
| ,, | 100 | ,, | ,, | ,, | 50 ,, |
| ,, | 50 | ,, | ,, | ,, | 60 ,, |
| ,, | 25 | ,, | ,, | ,, | 70 ,, |
| ,, | 15 | ,, | ,, | ,, | 80 ,, |

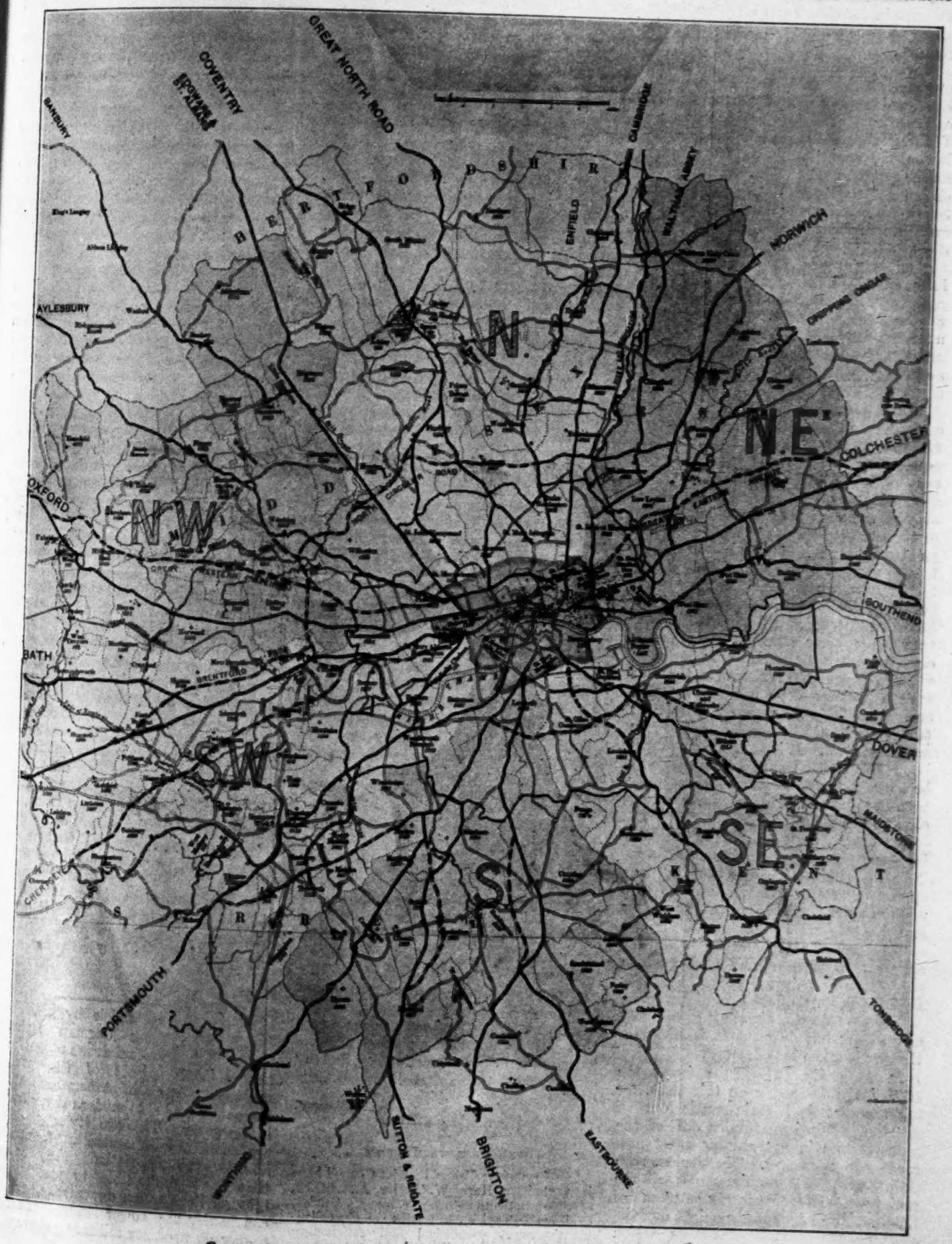
The Commercial-road was formed by the East India Company, 1803, and Vasie's Archway-road, one of the best pieces of road engineering around London, was commenced in 1810. In this year Macadam began those inquiries and experiments that revolutionised the method of road-making. He is often credited with the invention of this method, but it was already in use in Sweden and in Switzerland at that time, and Macadam's merit lies rather in the activity with which he prosecuted his

inquiries and the pertinacity with which he pressed his proposals upon the attention of the public. His recommendations were emphatically adopted by the Select Committee which had taken the place of the Standing Committee on Highways, and this body further displayed a wise prevision in advising that a special Act of Parliament should be passed, uniting all the Turnpike Trusts within a distance of about ten miles round London under one set of Commissioners, with the object of rendering the roads of the metropolis "a pattern for the Kingdom."

This proposal, however, aroused intense opposition from the numerous interests concerned, and, after a lapse of many years, was only partially carried into effect.

More would have been done but for the fact that with the advent of the railways it appeared probable that roads would become obsolete, and from this time forward the subject was comparatively neglected. Perhaps it was almost a pity that the railway did not come into being some ten or fifteen years later than it did, as in that case our roads would have been materially improved and placed in the hands of a well-trained central body.

On the Continent, where the road engineering was in advance of ours and the railway a few years behind, we see that the tradition has been retained of studied design and substantial construction




**Greater London, with suggested roads** (from the Board of Trade Report).

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in road-making—a tradition lost to us through the fact that, while we were in the act of acquiring it, the railway movement swept in and diverted all our other activities into the channel of its own dominant current.

From this period onward, the road-making around London has been practically stationary, and the principal activities we have to chronicle are in bridge-building. In this connexion it may be noted that the existing bridges over the Thames in London have all been built since the beginning of the XIXth century.

Having summarised this historical section, it is time we turned to the report itself, which proceeds to separate the area of Greater London into seven divisions. The first, Central London, is temporarily left out of account, as it forms the focus of all the arterial roads. The remaining six, designated the South-Eastern, Southern, South-Western, North-Western, Northern, and North-Eastern respectively, are dealt with separately in the report, the existing roads having been carefully examined, their shortcomings in regard to existing and future traffic requirements pointed out, and the most needed relief roads sketched out. These additional roads (see map) are described, and the reasons for the lines selected are comprehensively stated.

The preliminary studies of the character and amount of traffic between London and its various suburbs are particularly well handled; not only is the type of traffic dealt with, namely, the proportion between passenger and commercial vehicles, but the differences due to the seasons have been considered, and an attempt is made to fix a relative value to the various kinds of vehicle. Thus, taking the automobile as the unit, passenger vehicles are classed as of the following "obstructive" values—Electric trams, 10; horse omnibuses, 5; motor omnibuses, 3; horse carriages, 2; cycles, ½; while trade vehicles are classed on the same scale as follows—Two horse (slow), 10; one horse (slow), 7; motor (slow), 5; two horse (fast), 4; one horse (fast), 3; motor (fast), 2. It is pointed out that it is obvious that all such values can only be approximate on account of the variety both in speed and in control among every class of vehicle.

The report, however, adopts this unit for purposes of comparison, defining "*Traffic Volume*" as the average aggregate number of traffic units passing a given point per minute between 8 a.m. and 8 p.m.

"*Average Traffic Density*" as the aggregate number of traffic units which pass the point during these hours per minute per 10 ft. of clear carriageway.

"*Greatest Traffic Density*" is similarly arrived at; but only the busiest hour of the day is taken into account.

In Appendix B. will be found the statistical information on this basis, for all the principal main roads out of London. This is naturally one of the main factors in determining what new roads are necessary. The report then deals with the requirements of the rapidly-extending tramway system of London, and incidentally points out the objection to central standards which impede fast vehicles to a serious extent; it is considered that in some cases their removal would increase the capacity of the roads by quite 20 per cent.

We then come to the descriptive notes on existing roads and the suggested additional ones, which are prefaced by some general remarks on the widths and general design of these roads. Though, as is pointed out, the report confines itself to purely utilitarian considerations, it makes an exception to its rule in pointing out that there is another aspect from which the approaches to London should be regarded. "In foreign countries especially it is recognised that the main avenues of approach to a great city should be invested with some degree of dignity, and should be pleasant as well as useful to the thousands who traverse them. The example is one that might well be followed in the neighbourhood of London, and it should not be overlooked that in places where additional land, over and above what is strictly required for the necessities of traffic could be obtained without undue expense, the amenities of roads would be greatly enhanced by avenues or clumps of trees, and ornamental planting in suitable places. Prominent sites, which might be occupied with advantage by buildings of some architectural pretensions, or by monuments of a public character, might be reserved with a view to devoting them to such purposes, and sufficient control might be retained over the use of the frontages to prevent the appearance of important roads from being marred by the erection of unsightly buildings."

We need read no further! We started the perusal of this report with the impression that at some stage or other the architect would have to assert himself and point out that the utilitarian problem was only a portion of the whole; but here we find Sir Herbert Jekyll going out of his way to indicate that, though the Board of Trade is not concerned with architecture, the architect ought certainly to concern himself with the traffic proposals of the Board of Trade. These proposals are put forward most modestly, as in sketch form, and with hints of alternatives to be considered, so that while they are still at this tentative stage there is the opportunity for their consideration from the artistic as well as the practical standpoint.

Though roads and streets form the framework of a city, there is much to be dealt with in conjunction with this framework; notably the areas, such as the river valleys, that ought to be allocated for parks and reservations. London presents a problem that must be regarded as a whole, and no one section of it can be divorced from the others; housing schemes, open spaces, railway routes, and roads must all be brought into the account, and it is for the architect to see that all the conflicting incidents are harmonised into one great entity, worthy of its place as the capital city of a world-wide Empire.

### BRYNMAWR SEWAGE DISPOSAL.

The Brynmawr Urban District Council have instructed Mr. Harry W. Taylor, A.M.I.C.E., of Newcastle-upon-Tyne (Messrs. Taylor, Walling, & Taylor), to advise the Council as to the most economical and satisfactory method of sewage disposal.

## NOTES.

**Conservation of the National Water Resources.**

THE rapid increase of population, combined with the extensive works inaugurated by the large municipal authorities throughout Great Britain, has not only led to a vastly increased demand for water, but has also had the effect of leading to something approaching the nature of a scramble for water-collecting areas. Great cities, like Birmingham, Liverpool, and Manchester, for example, go far afield to annex sources of supply properly belonging to distant counties, and that may conceivably be wanted by those counties in the future. Smaller cities and towns follow the same course of procedure, and the outlook for country towns and villages becomes daily less promising. The need for dealing in a systematic and comprehensive way with the entire subject of water supplies and kindred matters has been repeatedly urged in our columns, as elsewhere, but at present we seem to be no nearer to the desired end than we were ten years ago. The subject has once more been brought forward for discussion by the paper read to the Surveyors' Institution by Mr. W. R. Baldwin-Wiseman, who advocates a far more comprehensive project than the establishment of a central authority to deal with water supplies and drainage. He asks for nothing less than the creation of a new Government Department, with a Cabinet Minister at the head, one of whose first duties would be to establish a uniform system of water boards, comprising representatives of local councils, water supply, navigation, fishery, and other interests within the administrative area, to co-ordinate and control all existing hydraulic works. The central authority would be occupied with legislative duties, researches in continuation of the work commenced by the Royal Commission on Sewage Disposal, the collection and dissemination of data on water purification, inland navigation, and fisheries, and generally in looking after the numerous local water boards, and all powers connected with water now exercised by various Government Departments would be turned over to the new Ministry. While the paper to which we refer is one of much intrinsic value, and constitutes a masterly review of the great subject discussed, we fear that it asks for more than can reasonably be expected from Parliament. Even the less ambitious proposals of scientific associations and Royal Commissions have fallen on deaf ears so far, but we trust that the appeals for reform which have been made for more than thirty years will not much longer be set at naught.

**Bridge Portals.**

AN article by Mr. Franz in a German technical journal draws attention to the æsthetic aspect of the pseudo-mediæval portals in stone which are so frequently added to modern steel bridges in Germany. The two styles of design are so widely separated in themselves and by the associations they convey that it is impossible to justify their inharmonious union any more than one can justify the Tower Bridge. There is to-day no need for military gateways at

or near the ends of a bridge, save only in the case where such a structure gives access to a fortified town, and it would generally be preferable to adopt less obtrusive and more appropriate means of giving architectural effect to the masonry abutments and piers which are perfectly legitimate adjuncts to steel arches and girder spans.

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**Lockleys, Welwyn.**

SINCE the death of Mr. George Edward Dering, in January, many stories have been circulated about the "modern hermit," in whose land near Welwyn antiquarian discoveries of great historical importance were made a few years ago during the work of cutting a road through a portion of the estate. Mr. C. R. Ashbee, F.R.I.B.A., one of the few people who had the privilege of penetrating into Lockleys, describes many of the reports as picturesque over-statements, and incidently, in his letter to the *Times*, gives an interesting note on the mansion. On one occasion he went there with Sir Alfred Scott Gatty, who suggested to Mr. Dering that a picture gallery should be built in which to store properly the valuable works of art scattered through the house. "Ah, that was suggested forty years ago!" said Mr. Dering. "Would you like to see the plans?" Then he produced a beautiful design of a new wing to the house by Philip Webb. It is not improbable that, had Mr. Dering lived, the improvement would have been carried out. "Lockleys," writes Mr. Ashbee, "is a fine example of Hertfordshire late XVIIth or early XVIIIth century work, dignified, restrained, scholarly. It gave the impression of hardly having been touched since the day of its creation. It is hoped that its great charm and character will be allowed to continue. It was a fitting home for an old recluse who loved silence and solitude, and, though he used the bulk of its rooms as storage for the many things in life he did not want, it was quite evident that he felt its beauty, and, like a wise man, left it scrupulously alone."

## EXHIBITIONS OF WATER-COLOURS AND ETCHINGS.

MESSRS. AGNEW'S forty-fourth annual exhibition of water-colours at present on view at their Bond Street Galleries is composed largely of some of the earliest and still the finest exponents of the art of water-colour drawing. These pioneers, the men of the Norwich School, sincere, good souls, loving English landscape, content with interpreting it, seeking, indeed, nothing else but the understanding of it—its shadows and its breezes—have often enough been imitated but never surpassed. They are as racy of the soil as the early painters of Barbizon. And David Cox and Peter De Wint, just as Millet and Rousseau, established a vogue for other artists which developed into what is called a "school" of painting; but in neither case have the later exponents advanced beyond their masters either in inspiration or, what is more strange, in technique. The charm of David Cox and De Wint, particularly David Cox, lies in their almost complete absorption in the colour and temper of English landscape, in a sort of pantheistic apprehension of the tumult of wind and sky or of the calmer moods, in which Nature expresses itself in the comparatively northern latitudes for a painter. Turner (who is admirably represented at the present exhibition) devised schemes of colour largely from an idiosyncratic and brilliantly imaginative feeling for colour; whereas David Cox and De Wint sought their inspiration solely and simply in the atmosphere and furniture which go to compose a characteristic English landscape. David Cox is as homely as Burns or Wordsworth. These poets and painters are all local in a sense; in so far as you can apply geographical limitations to the origin of a universal sentiment. Turner's art, on the other hand, had no geographical limitations; whether he paints a castle on the margin of the north-east coast of England or a classic ruin on the borders of the Mediterranean there is the same abstraction in a scheme of colour, or in sunlight and atmosphere, independently of any individual place interest. That is, of course, to distinguish Turner as moved more by the ideas which we associate with classic art rather than by the individual lyric feeling, to our thinking not less precious, which at one time or other has found expression in every phase of art in this country. Messrs. Agnew's exhibition comprises a comprehensive selection, including many drawings by Prout and David Roberts of architectural interest. And there are some excellent examples of Copley Fielding, Cecil Lawson, Brough, Frederick Walker, not to mention others, all well worth seeing.

The twenty-ninth annual exhibition of the Royal Society of Painter-Etchers and Engravers provides its own message, of which we are a little puzzled to gauge the import. The Sociey has done very well, but we are not sure that it might not have done better. The exhibition as a whole suggests an air of complacency without containing many works of stimulating merit. It is, however, rich in architectural subjects; and in his search for the picturesque in building the etcher is not inclined to the same motives as the painter. We were very glad to see the stately building of Somerset House, for instance (the river front), and some half-timber work of a more or less interesting kind from various quarters. Mr. W. H. Ansell has devoted some of his time to depicting the buildings of Abbeville, certainly one of the most picturesque of the smaller towns of northern France. His etching of the west front of the Cathedral of St. Wulfran (masked in the lower part by the conventional type of French town house) not only shows an individual choice of subject, but also shows boldness and capacity in artistic handling. The same etcher's "Honfleur" is also excellent; he gets the effect of colour and texture without relying upon the quite legitimate, we suppose, rubbings out and washes which strike us, not quite pleasantly, in the work of some of the other etchers whose names are more particularly associated with painting. Mr. Axel Haig is represented by a fine and characteristic work; Mr. Mortimer Menpes, Sir Charles Holroyd (who has apparently discovered an entasis in the columns of the Parthenon which would have surprised Penrose), Mr. Hedley Fitton, Mr. William Monk, Mr. Nathaniel Sparks, Mr. Charles O. Murray, and Mr. Eugène Béjot all aim definitely at a certain sort of pictorial composition when dealing with architectural subjects. Notwithstanding certain phases of contemporary criticism, the work of the founder and late President of the Society, Sir Seymour Haden, was particularly welcome. It was also a happy idea to place on view the tools with which he worked. After we had perambulated the walls, we turned again to the work of this gifted amateur, who, in seeking the recreation of a valetudinarian, found etching by one of those curious accidents or instincts that have now and again been largely responsible for putting new life into an art which had been surrendered for the time being, as it were, to the indifferent mercies of the general practitioner.

## MODERN CHURCHES.*

THE improvement in the building of houses, even small houses, has been very considerable in the last few years. Everywhere one comes across nicely designed little houses, many of which are quite well built, too, but there has not been the same improvement in our churches.

This is not because we have to build cheaply; no doubt it increases the difficulty, but if the same care, thought, and ingenuity was given to the design for a church as is given to that for a house, I believe we should have fewer mean dull churches than is the case. The requirements of a modern church are somewhat different from those of a mediæval one. We have to provide for a larger number of worshippers, who must each have a seat, and even in quite small country places a choir is looked upon as almost essential, and so is an organ. In addition to these things, a modern church has to be heated in winter, and it certainly should be ventilated. All of these things ought to be considered from the outset, and not put in as afterthoughts.

Unfortunately, Christians are not agreed about Divine worship; there are, as we know, many different views about it. For practical purposes we may, I think, divide these many views into two main divisions, which, for lack of more exact words, I will call the Catholic and the Protestant ideas of worship. The former makes the Holy Communion very markedly the central act of Christian worship, accompanied with more or less ceremonial. The latter, although no doubt believing it to be the chief thing, look upon it perhaps more as a memorial, and give great prominence to preaching. These two divisions of thought affect us in the building of churches, because the idea, and the plan and arrangements of the buildings should be different. I suppose the plan and arrangement that would suit one of the Protestant bodies would suit the others, except in small details. Generally the pulpit will occupy the central place at the end of the church, in front of which it is convenient to have a platform, or rostrum, upon which is the communion table and seats for the church officers. I understand in many Protestant churches the bread and wine are carried to the people in their seats at communion time, so a communion rail is unnecessary. An organ is generally wanted to accompany and lead the singing in which all the people join. It is convenient to place the choir, when there is one, near the rostrum, and the natural place for the organ is there, too. The seats, which should be comfortable but not luxurious, should be conveniently arranged for all to see and hear the preacher, with ready access so that the church officers may easily reach the people at communion time. The services are conducted with the least possible ceremony and ritual, but not without dignity and reverence.

The arrangements must therefore be for the greatest convenience, and may, possibly will, vary in each case.

Probably the best form of plan is a short parallelogram, or a horse-shoe shape, with aisles or passages at the back of the seats leading to gangways between the blocks, and there could be no objection to one gallery around. Unless the strictest economy is necessary, a dome would be perhaps the best form of roof, or a curved ceiling. Architecturally such a building might be quite a beautiful thing. It should express the spirit and sentiment of the Protestant idea, and so should be, I think, simple and rather plain, but dignified and large in character. No attempt should be made, as is so often and so unsuccessfully done, to adapt a mediæval church to the purpose. I do not, of course, mean the detail, but the plan and general scheme of the building. The idea of worship in the Middle Ages was very different. It seems that sermons were not always given in church, but perhaps quite as often out of doors, and there was only one sermon a week. The churches were seldom provided with seats. The people stood or knelt when they liked. There were generally several altars, except in the smallest churches, some of which were considered the property of, or at least peculiar to, a Guild or Society, and at which the members heard mass. There were often several chantries at which mass was said daily for the repose of the soul of the founder, who left an endowment for that purpose. And

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*A *résumé* of a paper read before the Birmingham Architectural Association on January 6 by Mr. C. Spooner, F.R.I.B.A.

there was very much ceremonial and ritual, many processions, and a good deal of movement. In those parishes where there were several chantry priests it is to be supposed that they assembled in the choir of the church several times daily to sing the divine office, at which the people might be present if they liked, and, as a matter of fact, often were, but I suppose quite as often no layman was present unless he was in some way connected with the church.

Mystery plays were acted in the churches, too, and much went on which would astonish a modern English congregation. The churches were very well adapted for such uses and for the customs of the times, but things have changed since then both in the Catholic and much more in the Protestant churches. Still, the mediæval churches are quite suitable for the Catholic form of worship to-day, because that form remains in essential the same as it was from the beginning of the church, or at least from the time when Constantine ended the persecution of Christians, and the church emerged from the catacombs and took possession of the Roman basilicas. Ceremonies may have grown, and certain details changed, but the essential of divine service, the offering of the Holy Eucharest, is the same, and, I suppose, will remain the same as long as the church militant is on earth.

The great difference, I think, between the idea of our fathers in the Middle Ages, and the generally expressed idea of people to-day who build a church is that we think first of providing for the congregation, whereas the people of the past thought first of providing for the glory of Almighty God. They thought, and I think, theirs was the truer proportion, that the church should be the best and most beautiful building in the place, completely furnished and decorated with the best they could give. I am optimist enough to hope such an idea will prevail again. There *are* modern instances of it. Generally, however, we who are called upon to build churches, have to do the best we can with very limited means, and the difficulty of making a beautiful thing worthy of the high purpose it is to serve is greatly increased thereby. It behoves us to be sure our standards are true, and that we thoroughly understand all that is required, so that we may make proper provision of space and shape for that which is essential, and know for certain what may best be omitted or postponed.

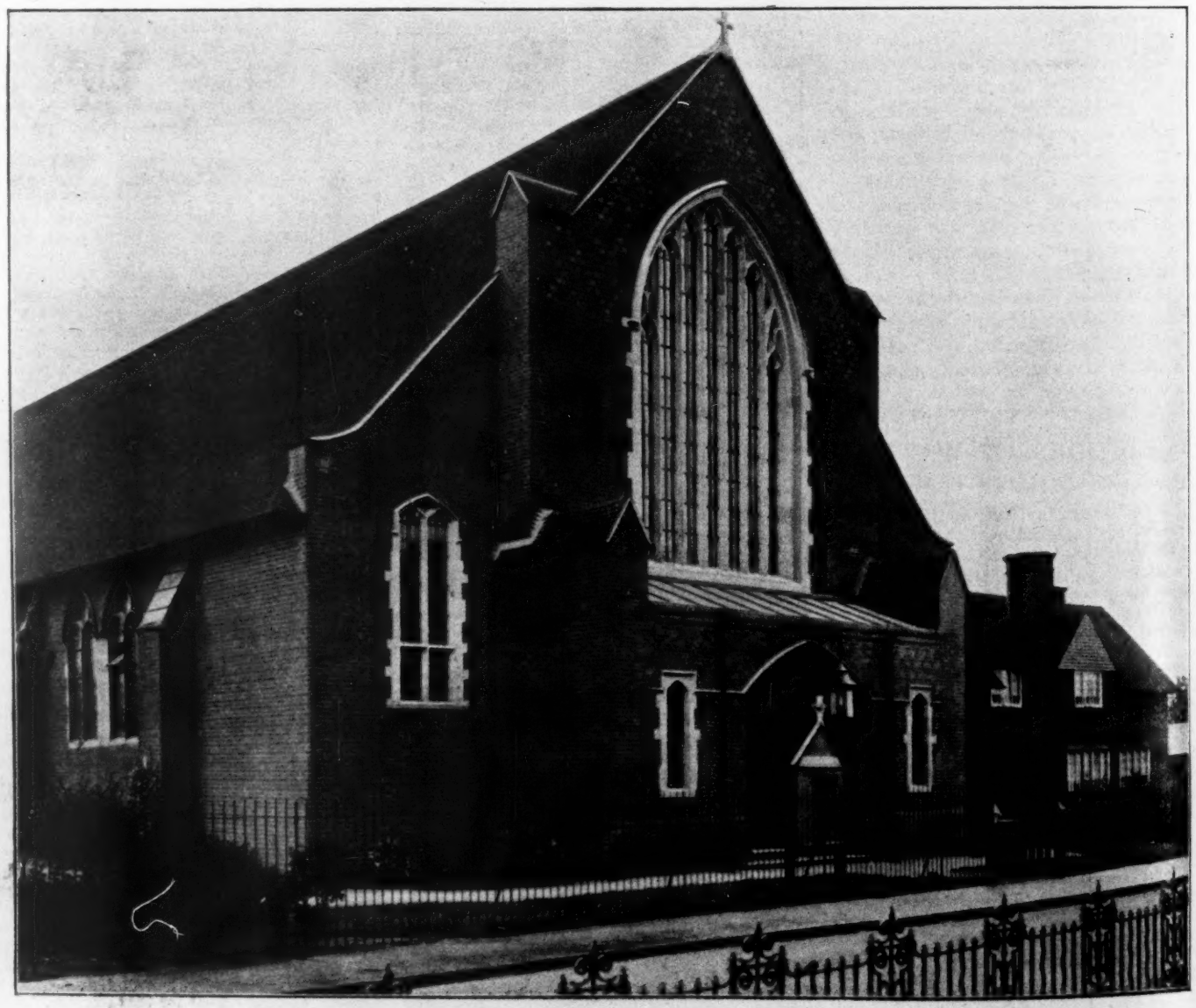
The first thing to bear in mind is, I think, that a church is a monumental building, one that stands for a great, perhaps the greatest, idea. And this is so whether it be a small one or a large one. We must, then, build solidly and substantially of thoroughly good, well tried (but not necessarily expensive) materials. One would naturally use that material which is most readily obtainable in the place. It does not always follow nowadays that local material will be so. I have heard of cases where it has cost more to quarry stone close to the site from a disused quarry than it would have cost to have it from one at some distance. But local material is nearly always the best to use, other things being equal.

It must be used economically, but not meanly, and in such a way as to ensure a minimum of necessary repair. For instance, although thick walls are always desirable, it is often economical to concentrate the thickness in the form of piers or buttresses to take the weight and thrusts of the roof, with curtain-walls between of sufficient thickness to resist weather and to be really durable. The modern tendency is to make them too thin. If the stone or the brick, or whatever it be, that the walls are built of, be poor in appearance, or porous, the best thing is to cover them with good plaster of some kind. There is a curious prejudice against using plaster on a church, but many of the old churches were so treated with delightful effect.

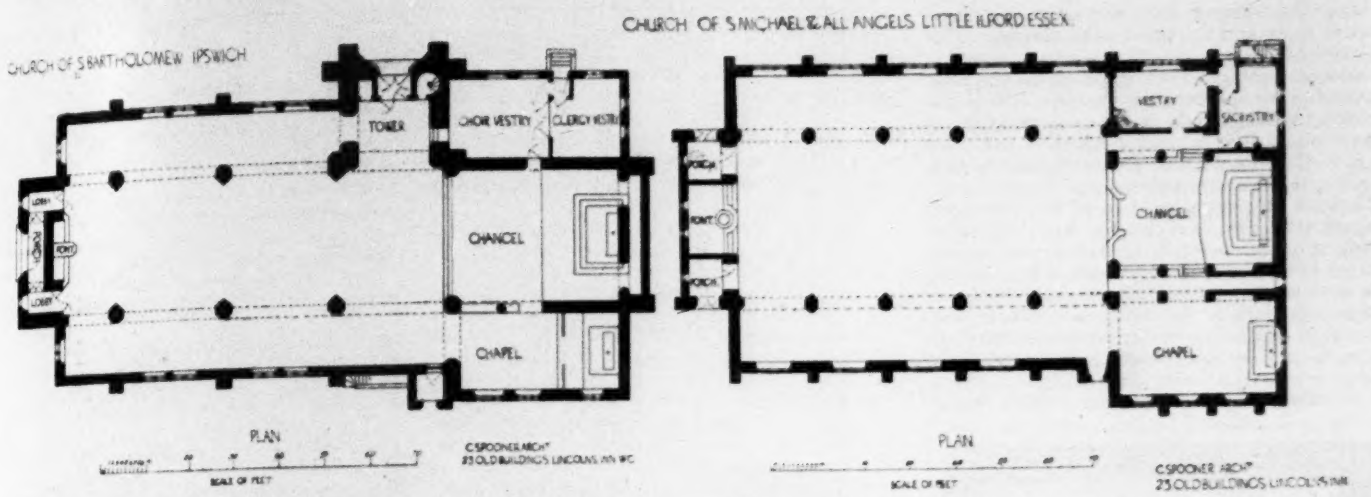
A well and solidly built church, however simple and plain it may be, well proportioned and well spaced, will always be a beautiful thing, and in the long run will always be admired. Any ornament that may be added to it will enhance its beauty, whereas a meanly built thing, or one ill-proportioned, however highly ornamented, will be a lasting disappointment, to say the least, to everyone connected with it. Largeness and simplicity, good proportions, together with sound building, tell for very much more than much ornament, delightful as ornament is, when it is good.

It is seldom that an architect is asked to select a site for a church. The land is generally bought or set aside before he is consulted, and often there is not much choice. The shape of the site and the surroundings will have a great effect on the plan of the church, and may settle how it shall be lighted. Questions of cost will settle how it may be roofed or ceiled to a great extent. Generally I think it is better for a church to be wide, and not too long, if this be possible. None of the worshippers are then very far from the altar or from the pulpit. I suppose the most usual size for a modern church is that to accommodate from 700 to 1,000 people, and to work a parish which this number represents at least three clergy are required; but a larger number should be provided for in the chancel. It is unnecessary in planning a church to be guided by the type of service which happens to be the custom in the particular parish. I mean whether the services are rich in ceremony or comparatively plain. Every church ought to be planned so that it is suitable for the full ceremonial, because a church is not built for the present generation only, but for many generations in the future, and it will be just as suitable and convenient for the plain service as for the other.

Let us think, then, what is required for the full ceremonial. First, a large altar, never less than 7 ft. long, 2 ft. 4 in. wide (2 ft. 6 in. is better), and 3 ft. 4 in. to 3 ft. 6 in. high. The



**Church of S. Bartholomew, Ipswich. Mr. Charles Spooner, F.R.I.B.A., Architect.**
(Photo by Cyril Ellis.)




English tradition is for a very long altar, and I, personally, think it an excellent tradition. The altar should stand three steps above the level of the chancel, each of which should be at least 1 ft. 6 in. wide, with a space in front of the altar of 3 ft., and there must be a space of 5 ft. between the nose of the second step and that of the third, but if there is to be a communion rail, it should not be less than 5 ft. 6 in. The communicants kneel upon this lower step, and a rail is almost necessary for old or infirm people, but it need not reach right across; a wide opening may be left in front of the altar, which looks very well. Then a clear space of 4 ft. must be allowed westwards from the nose of the communicants' step, and more, if possible. This is the irreducible minimum of space necessary, and more should be allowed unless the strictest economy forbids it.

There is some difference of opinion whether the choir should be in the chancel or in a gallery at the west end—and there is much to be said for both. I think the older tradition is for the chancel. Whether the choir be in it or not, a good-sized chancel should always be provided. It may or may not be separated from the nave by an arch, that will depend on the construction of the building; but if there is an arch it should be lofty; a low chancel arch prevents the celebrant at the altar from being properly heard in the nave, and makes too great a separation between the nave and chancel.

In S. Agnes, Kennington, by G. G. Scott (which is among the most beautiful of modern churches), the chancel is equal to the nave in height. As will be seen by the illustration of Bodley's beautiful church at Holbeck, Leeds, the omission of an arch between nave and chancel is no detriment to a very fine effect. But some mark of division is certainly advisable. A screen is perhaps the best way of doing this. Whether a dwarf screen, or such a one as Bodley has put at Holbeck, which runs across from aisle wall to aisle wall, would, of course, depend upon the plan of the church and its general character. The only change of level required for ceremonies from the nave to the altar I have already spoken of, viz., three steps, one each for the celebrant, deacon, and sub-deacon. A kneeling desk may very well be provided for the communicants, *e.g.*, that shown in my own sketch for an altar in Hadleigh Church, if for any reason it is wished to have the fewest possible steps. The altar is necessarily a small thing in a big building, and because it is the chief thing in that building, at which the highest act of worship is made, strictly speaking, to enclose and protect which the church itself is built, it is obviously well to give it the greatest possible importance and dignity. No better way has yet been found, I think, than that of raising it on several steps; but it is not always, indeed, I feel inclined to say it is seldom desirable to raise the chancel much above the nave—one or two steps are better than three. The place for the steps is therefore between the choir and the sanctuary, as at S. Agnes, Kennington.

The size of the choir is a matter for each parish to settle for itself, and will depend upon local conditions. There is no reason why a small church should not have a large choir, or a large church a small one, if that suits the parish. Nor is there any reason why space should not be allowed for a good-sized choir, even if at the time of building a small one seems enough for the place. Conditions change, and space is seldom or never inconvenient, and always has a fine effect. I think one ought to allow 22 in. in width for each man—24 in. is the width to allow, if possible; 20 in. is, I think, too little, but it is very usual.

Sufficient room must be allowed for the men of the choir to kneel comfortably. It is not easy to sing while kneeling, and the difficulty is increased by being cramped; there should be not less than 2 ft. between the edge of the seat and the back of the desk. The desks should be wide enough for good-sized books to lie upon, and should only have a slight slope; they should not be too high (about 2 ft. 5 in. above the kneeler is a very comfortable height), or singing while kneeling becomes too difficult.

The clergy seats may be at the end of the choir seats in a line with them, or may return against the screen, facing east, which is perhaps the better plan.

It is certainly a tradition in England for the font to stand at the west end of the church opposite the altar, and I believe one of the canons orders it to be there, but I have not been able to verify this. It adds dignity to raise it above the level of the nave floor. Plenty of space should be allowed round it for the god-parents of those who are to be baptised. A font should be made of stone or metal. If the stone is at all porous it should be lined with metal, and it should always be provided with a waste-pipe leading to a sump in the ground below.

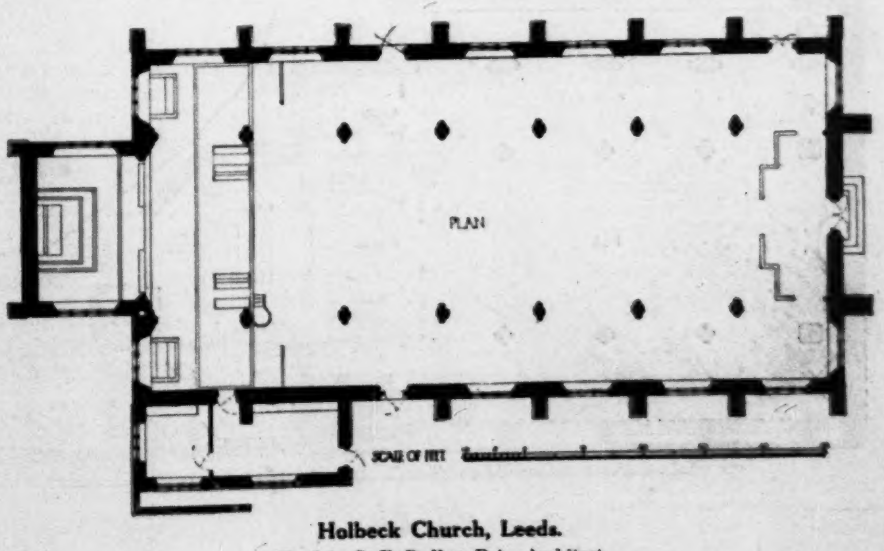
The ritual of the Roman Catholic Church suggests that the baptistry should be a separate place opening out of the church, or even outside it; so a Roman Catholic church would naturally differ in this respect, as well as in some others, but the differences are not great, being mostly small details to suit the difference in the two rites.

The pulpit may be in any convenient place. It is a platform from which to address the people present in church, and should be put where the largest possible number of people can hear and see. It may be of any material, and there is much to be said for a movable pulpit which can be put anywhere that it may be wanted in the church. Generally, I think the south side will be found to be the best place, because the preacher has the bulk of the people to his right, and, except in a small church, a little way west of the chancel.

The traditional scheme for a church consists of a nave with an aisle on each side, and a chancel the width of the nave, or sometimes narrower, at the east end of it. If the aisles run as far as the sanctuary, and the supports for the roof are not very big or numerous, this makes a convenient church. The next problem is how to roof it and light it. Unless funds allow of considerable height, it is, I think, a mistake to attempt a clerestory. I know of nothing which looks poorer or meaner than a clerestory and low aisles with a lean-to roof. I do not know of a single instance of that scheme being successfully treated, but there are scores which prove how hopeless it is. Spacious aisles on each side of the nave of a good height with lofty windows will give a very much better effect, but the main light must be from the west window, the side windows being supplementary.

I think the light pouring in from the west end of a church is one of the best ways of lighting it. The roofing of such a plan presents difficulties. The obvious way is to run three separate roofs parallel with each other over the three aisles, which means, of course, very long internal gutters. If these get choked at any time water runs into the building, and does damage. In places where such gutters can, and will, be attended to regularly, the objection is, of course, greatly lessened, but still it is permanently there. Another way is to span the whole width of the church with one big roof. Sedding did this in his church at Ealing, and I have myself done it in two cases. It certainly makes a very big roof, but within limits I do not object to the effect. One drawback is perhaps that it makes repairs rather difficult. A series of gables over the aisles is another way out of the difficulty, but I do not think a satisfactory one. It is expensive, and cuts up the roof over much. Possibly a pitched roof over the nave and flat roofs over the aisles might solve the problem, but the outside would need skilful handling to produce a fine effect.

The supports carrying these roofs and dividing the nave from the aisles should be as small on plan as may be, so as not to have an attenuated appearance, and should not be more numerous than necessary. A smaller number of larger pillars, or piers, will cut up the building less than many smaller ones, and will make less of

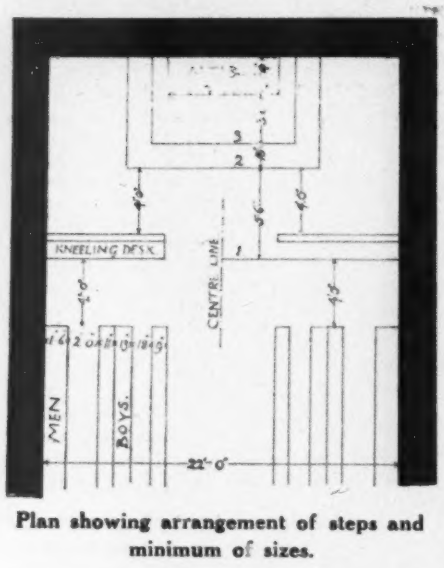



**Holbeck Church, Leeds.**
The late G. F. Bodley, R.A., Architect.

a separation between nave and aisles, and thus greater unity and the effect of spaciousness will be attained.

Another excellent type of plan is a nave and chancel with passage aisles only. Bodley's church at Pendlebury is the best example I know, and a splendid church he has made of it.

It is often a matter of some difficulty to find a place for the organ unless there is a good deal of height. If the choir is in a gallery the organ should obviously be there, too, and the whole thing is easily disposed of. If there is enough height it is, I think, best to put it in a loft of its own to one side of the chancel, but it is important that it should be as open to the church as may be, and not enclosed in a chamber. Sometimes, however, there is no other way possible in a small church, and then, if there is a fairly high opening for the sound to come




**Plan showing arrangement of steps and minimum of sizes.**

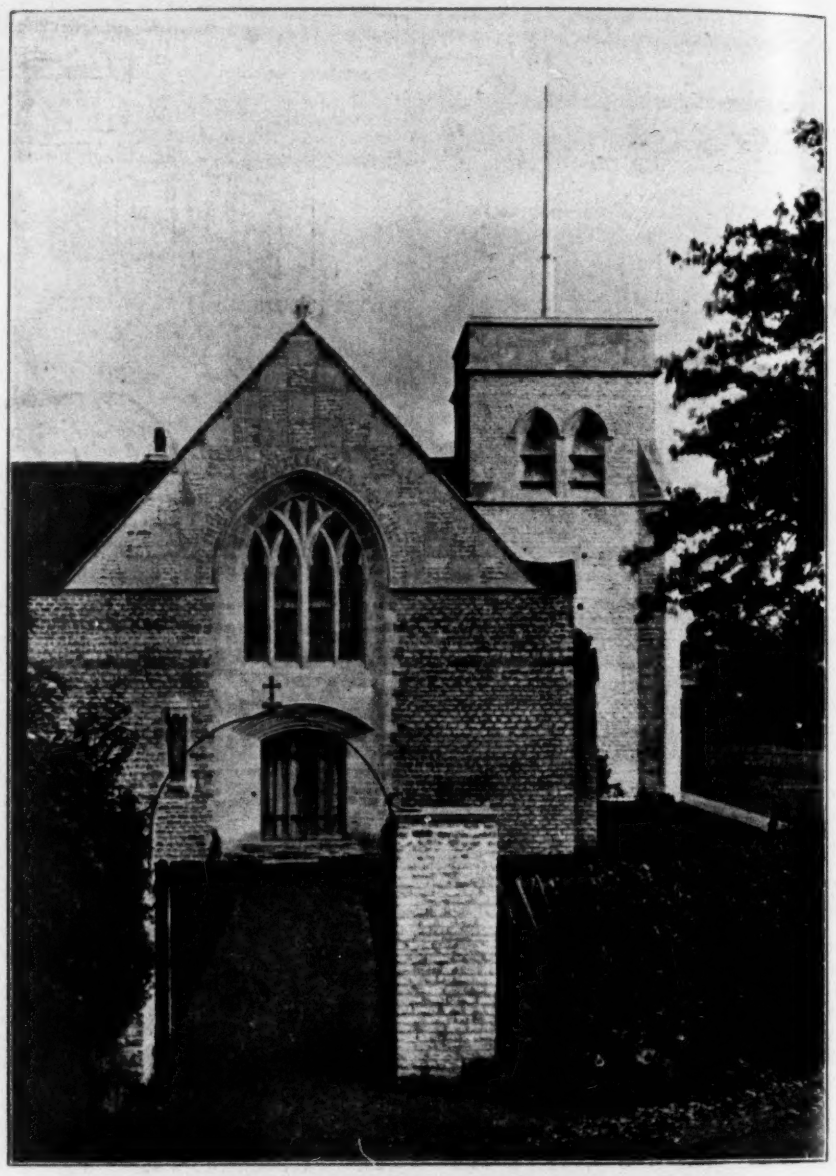
out, the objection to an enclosed chamber is more theoretical than real.

If there is a loft over the chancel screen it may very well be used for the organ, which can be partially bracketed out from the wall on either side and partially in a shallow transept or recess. This plan, however, is rather expensive, and a cheaper way has to be found in most cases. The cheapest form of organ is, I believe, that known as a "four-poster," *i.e.*, one standing all together in a short parallelogram with a post at each corner to hold the inclosing rails. The bellows are below inside, with the swell box over, and the large pedal pipes range along the sides. Over the keyboard stand the metal pipes which can be grouped and arranged in a great many different ways without adding to the cost.

It is necessary generally to accept this fact and provide a sufficient space for the instrument. Now, if it stands on the floor of the aisle beside the chancel, it nearly always blocks out the altar from those sitting in that aisle, which, I think, is a great objection. In such a case the best way is, as I say, to make a loft for it so that there is a clear space under, through which the altar may be seen.

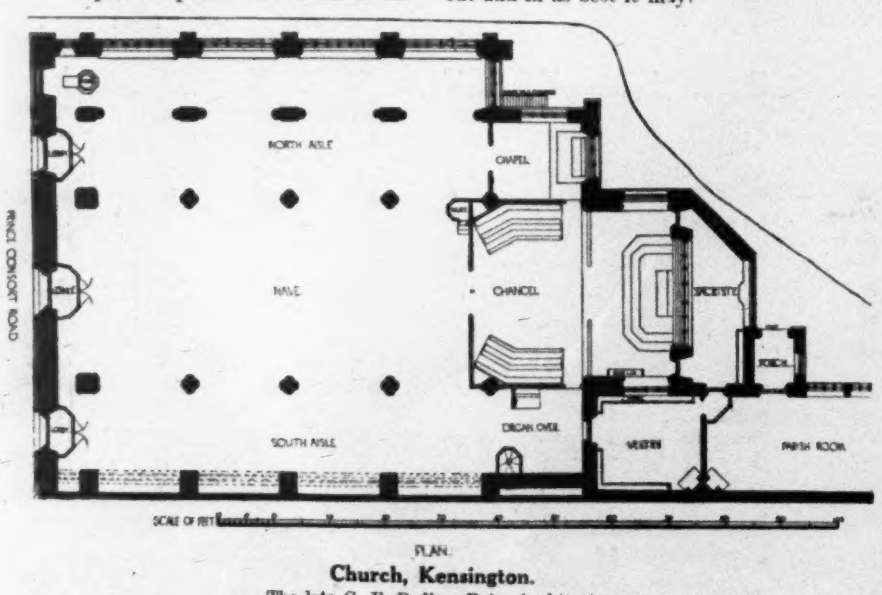
Another important part of a church is the vestries. Two at least should always be provided, and they should be as large as possible, within reason. Sometimes the fall of the land allows of their being put under the sanctuary, which is an excellent arrangement, and generally allows ample room.

An entrance to the chancel should be contrived immediately west of the communicants' step, but it should never be into the sanctuary itself. Or it may even be west of the chancel, should that be more convenient, and it may be on either side. The doors to the vestries should be wide and high—they very seldom are—and the procession has to edge and shuffle out and in as best it may.



**Church of S. Christopher, Haslemere.**

Mr. Charles Spooner, F.R.I.B.A., Architect.




PLAN.

**Church, Kensington.**

The late G. F. Bodley, R.A., Architect.

I have said nothing about seats for the people. My own feeling is very strongly for chairs. I think they look much better than pews; they seem to me to block the floor space less. But they must be large enough and sufficiently far away from one another both in width and depth to allow for kneeling, and the backs must be low, say 2 ft. 6 in., or kneeling for any length of time becomes something of a torture to any who are at all feeble or inactive. The least space that is practical at all for each person is 20 in. of width and 3 ft. of depth; but this is not really enough except for small people, and it ought, wherever possible, to be increased to 2 ft. of width and 3 ft. 6 in. of depth. No rails of any kind should be allowed between the front legs of the chair or under the seat lower than a clear 12½ in. from the floor. If the chairs are spaced 2 ft. apart there will be ample room for men's hats between the chairs.

It is almost necessary to batten the chairs together and to fix them to the floor, but this should be done in such a way that the groups can easily be removed for cleaning or other reasons. The alleys should always be as wide as possible, the central one never less than 5 ft., and the side ones than 4 ft.

Doors to English churches are far too small, in my opinion. I think one should aim, whenever possible, at doubling the width and more than doubling the usual height. The doors should be carefully considered and placed for ready incoming and outgoing, and arranged to avoid draughts—by no means an easy matter. I cannot bring myself to tolerate a revolving door.

Heating is an important matter which should be most carefully considered and arranged for. My own opinion is strongly in favour of hot water (not steam), with radiators, until the day when electricity becomes cheap enough to be practicable. That is, I think, the ideal heating

agent, and will disfigure a building less than water-pipes and radiators.

Every church ought to be ventilated with sufficient and proper fresh air inlets, arranged for the air to be warmed in winter on its way in without being scorched, with means of removing vitiated air from the building. This is a difficult matter even when there are ample funds. Ventilating engineers have not yet succeeded in ventilating a large building like a church satisfactorily without disfiguring it, but much has been done, and every new church ought to be ventilated as well as possible.

There is no doubt that it is much easier to arrange for this when the church is ceiled in some way, rather than when it has an open roof. Now that timber is so scarce there is every reason to modify the use of open roofs, which look very poor unless the timbers are of large scantlings. Large scantlings, except in American grown timber (which is not fit to use in our damp climate), or in oak, which is generally too expensive, are not to be obtained any longer.

I have said nothing about external effect or style so-called. I am of opinion that the less we think about style, I mean the so-called historic styles, the better. By this I do not mean we should not study the work of the past; quite the contrary. I believe many of us do not study it enough. But we must do so to learn how effects are produced, in a critical and analytical way, and not to save us the trouble of thinking for ourselves, nor with a view of trying to reproduce it. We shall each have our preferences, and I hope we shall have them strongly, even in a way narrowly. I believe our own work will gain in quality and vivaciousness. But we must study work of all periods and all countries. Since a natural living tradition was killed by the classical revival we have gone on from one revival to another, till we came to the fashionable one of to-day, a revival of a revival. About the most dead, dismal, and dull thing imaginable, which is labelled "scholarly" by its advocates. An unconscious irony; surely scholarly is the very last thing that a work of creation ought to be, or, indeed, can be.

The art of architecture is that of beautiful building. We cannot build without knowledge—knowledge of material and construction, and the laws of stress and strain; and surely it is in the fitness of things that these should be expressed, not hidden?

That is the kind of scholarship that an architect should show. Any other that he may have will all be to the good, and make him a better man, but he must not try and show it off in his buildings any more than in his ordinary talk and dealings.

But a work of architecture must show more than knowledge; it must have some of that divine spark which no amount of study can generate. It is a Heaven-sent thing which I believe very many can get by sincerely trying to express their feeling of beauty in the most direct and unaffected way. Really trying to express beauty in terms of building material, because they feel the thing intensely, and not to gain praise or reward. That, and only that, will give life to art. And shall we presume to offer less to Almighty God in a building which is to be to His honour and glory.

### LINCOLN CATHEDRAL.

The appointment is announced of Sir Charles Nicholson as Consulting Architect to the Dean and Chapter of Lincoln Cathedral.

### ARBROATH ABBEY RUINS.

The Arbroath Town Council have had under consideration a letter from Mr. Oldrieve stating that he had submitted to the Board of Works the proposals of the Council with regard to the Abbey precincts, and that the Board regretted that they were unable to accept the offer of the Council to sell to the Department the Abbot's House at the price of 1,050*l.*, as the Department had no power under the Ancient Monuments Acts to purchase property in that way. It was considered that the work of the improvement of the surroundings of the Abbey was a work which should be carried out by the local authority, the work of the Department being confined to the preservation of the ancient buildings under their charge. The Board, he wrote, had agreed to take over the ground to the south-east of the Abbey and to erect a light wrought-iron railing, so as to preserve the ancient stonework at the eastern side of the Abbey.

## ORDINARY GENERAL MEETING.

An ordinary fortnightly meeting of the Architectural Association was held on Monday at No. 18, Tufton-street, Westminster, S.W., Mr. Arthur Keen, President, in the chair.

Mr. C. W. Brown, Bloomsbury-square, W.C., and Mr. E. H. Smith, New Southgate, N., having been elected members of the Association, Mr. E. Gunn, Hon. Secretary, announced the Fourth Spring Visit, to the offices of the General Accident, Fire, and Life Assurance Company, Ltd., Aldwych, by permission of Mr. J. J. Burnet, on Saturday, March 18; members to meet at the building at 2 p.m.

He also announced that a Members' Smoking Evening would be held at No. 18, Tufton-street, Westminster, on March 24, to which members are cordially invited. Light refreshments will be served during the evening, and a collection of drawings executed by English students in French ateliers and in l'Ecole des Beaux-Arts will be on exhibition.

## THE FUNCTIONAL APPLICATION OF THE ORDERS TO MODERN BUILDINGS.

**Mr. A. R. Jemmett**

then read the following paper:—

"Mr. President and Gentlemen,—The subject on which I have the honour to address you this evening is not one that I would have ventured to have chosen for myself, for it provides too many opportunities for so ill-informed a person as myself to give himself away most completely.

I should have thought that, as this subject has a certain scholastic or academic flavour, it might have been better handled by someone who has had the advantage of our recently-improved system of education, or by one associated with the initiation or carrying out of that system, or, failing either of these, by the person who is responsible for suggesting the title. As, however, the duty has fallen on me, I will do the best I can, hoping that the discussion will bring out ideas and information of more permanent value from those better qualified to speak.

On thinking over the wording of the title—"The Functional Application of the Orders to Modern Buildings"—it seemed evident to me that the accent should be placed on the word "functional"—the application of the Orders in such a way as to fulfil a function.

### Are the Orders Rational?

Now, sir, we are all aware that some people may question the legitimacy of the whole proceeding; may contend, with much show of reason, that you cannot rationally apply the Orders to modern buildings—whether functionally or otherwise—particularly in this country, where Classic architecture is only an imported plant. Such people may well hold that the Orders, as perfected by the Greeks, were a natural production of the time and circumstance; that they were suitable to that time and those circumstances only; that they were applied by the Romans indiscriminately and without any real understanding—sometimes rationally, sometimes irrationally; that where they applied them functionally it was as much a matter of accident as of design; that the same remarks apply to the period of the Renaissance, which, as a matter of fact, was a fundamental mistake turning architecture from the true path of progress and keeping it there ever since.

This is a point of view for which I have the greatest respect, but it is not the subject for discussion this evening. Obviously, also, it would be most inconvenient to admit it here, as the admission would bring this inquiry to an abrupt termination. I will merely refer those who hold it to the dictum attributed to M. Duc, Grand Prix de Rome and architect of the Salle de Pas Perdue of the Palais de Justice at Paris: "There is no architecture without the Orders"—just to remind them of another point of view, and leave them to make what they can of it.

It seems necessary for our purpose to consider Classic architecture as much an acclimatised or naturalised citizen as a Lombardy poplar, a French partridge, or a Jersey cow; as much a home product as a Brussels carpet or a French casement; and to grant the legitimacy of the application of the Orders, provided they are applied in such a way as to perform a function. What are these functions? And how may the Orders be best applied so as to fulfil them? These seem to be the questions before us to-night.

It is, I suppose, the orthodox standpoint that, as architecture is a structural art, the chief function of each individual feature is a structural one. It is, I believe, contended that no feature has a right to exist except in discharge of some structural necessity, and that its value as architecture depends on the degree of success with which it exactly fulfils that function.

Far be it from me to deny it, but I venture to suggest it is true only as far as it goes. The truth perhaps, but not the whole truth.

If we consider for a moment the use of the Orders as elaborated by the Romans, and again by the later Italians, we must admit that they often applied them in a way that was not strictly structural—as, for instance, in the Colosseum, with its concrete structure faced with superimposed tiers of applied Orders in stone—or in any colonnade with its intercolumniation too wide for the depth of its architrave.

Here we get features which are not exactly structural. The architrave, for instance, does not bear as a lintel from column to column as it would have us believe, but either includes the frieze in the same stone to get depth for the bearing, or else is jointed like an arch. When we remember that such features are to be found in most of the buildings since the time of the Greeks, where the Orders have been applied we realise that, if we are to adopt the standpoint that the function of every feature is structural and structural only—if we take a strict view and refuse to admit any feature that is not an absolute structural necessity—it is evident that our use of the Orders will be extremely limited, and that there is very little scope for their application to modern buildings.

### As a Means of Expression.

I would venture, then, to put forward the point of view that, although the chief function of every feature may be structural, yet it may perform other functions equally necessary to the completion of the building as a work of art. For we must remember that the structure of a building has not only to serve a practical purpose, but also to express that purpose in its general appearance. That although this purpose may be—indeed must be—to some extent expressed in the general lay-out and grouping of its structural masses, yet this expression is not complete. These masses have to be shaped, modelled, and decorated, to draw out, heighten, and complete that expression. For although the general arrangement and structure of the building may, after examination and critical analysis, prove satisfactory to the mind, yet it has to appeal through the heart to those not capable of this analysis; and to those who are capable it has to make its appeal with a swiftness that does not allow time for conscious analysis—an instantaneous, instinctive, emotional appeal which subsequent critical analysis should only confirm.

If this be so, then the features employed in this process of drawing out and accentuating the expression already inherent in the general lay-out and structural grouping, to obtain this instantaneous emotional appeal, are performing a function, not altogether structural perhaps, but none the less necessary. If we use the Orders for this purpose we may, I think, be said to be applying them functionally. It is in this way that they were used by the Romans and the architects of the Renaissance.

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If we endeavour to elaborate and illustrate this point of view we perceive that the Orders may be applied in many ways, all more or less functional; that it is possible for an Order to fulfil a structural function without necessarily fulfilling an expressive one; or an expressive but not a functional one, or both, or neither, and that their value varies accordingly.

For example, the main entrance to a large public building may need a porch or outside shelter, and for this purpose an open portico with columns and pediment may be erected. Here the Order may be so constructed as to fulfil its structural function, while at the same time the whole portico may serve to express and accentuate the entrance, and this expression may be more exactly obtained by the treatment of the detail and decoration of the Order in harmony with the purpose and character of the building.

In this case the Order seems to serve the functions, both of structure and expression, but if the same portico is taken from the entrance and placed at random against some other part of the building where it serves no practical purpose, the Order, no doubt, may still be so constructed as to serve its structural function of supporting its own roof, but it no longer fulfils the function of expressing the arrangement and purpose of the building. In fact, it has become a misleading feature, confusing the expression, however structually perfect it may be in itself.

### Emphasised by the Orders.

Again, we all know the usual arrangement of a small group of municipal offices. Offices on the ground floor with a central entrance, Council-chamber on the first floor over the entrance, with smaller committee-rooms on either side. Where the Council-chamber and committee-rooms are given a height in proportion to their relative sizes, we get a structure which by its arrangement and its general grouping and outline expresses up to a certain point, simply by these means, the character and nature of the building. If, then, it is proposed to intensify and complete this expression by the application of an Order to the Council-chamber, and perhaps a secondary one to the two committee-rooms forming the wings, so as to emphasise the fact that these are the important rooms, the Orders seem to perform a function of expression, and therefore to be legitimate, even though they are not required structurally. If, however, the actual columns or pilasters are not just applied to a wall already sufficiently strong, but form part of the wall itself, and are actually necessary for the support of the roof, being so spaced as to take the roof principals, they seem to perform a structural function also, and to have a greater value still as a means of expression, for they tell us more of the nature of the building. Arranged irrespective of the construction they tell us something, and so have a certain value: arranged to express the construction, they tell us more, and so have a greater value.

But the point I wish to emphasise is that even if they perform no actual structural function they may be used as means of expression in places where they are not a structural necessity, provided they are used in conformity with the laws of architectural expression.

### Features in their Right Place.

This seems to be the important point. The first thing necessary is to put the Order in its right place in the composition, where it expresses the right thing. If it is also structurally applied, so much the better, but this is a secondary consideration. An Order performing a structural function applied in the wrong place, where it emphasises the wrong thing, confuses the expression of the building as a whole, and is worse than useless. In such a case its structural application does not interest us much. If on approaching a public museum we see a grand portico with pediment, and, taking this for the main entrance, we mount the flight of steps only to find ourselves confronted with a blank wall, or with a small door marked "Private" leading to the offices, it is no comfort to us to reflect that the Order has been applied to fulfil the structural function of carrying its own roof. As we wander round the building in search of the entrance we are in no mood to admire its structural perfection. All we feel is that we have been taken in shamefully, and that we want the front door. Later on we may find time to reflect that even structural perfection itself is no good in the wrong place, and that the whole thing is a false idea and just a waste of so much good stone and honest craftsmanship.

The use of the colossal Order rising through two or more floors, a treatment which is just now so popular, is rather a difficult matter to handle. You can look at it in so many ways. As a method of expression it looks utterly false at first glance, but, after all, there is something in it. There are other things to express besides the obvious physical fact that the building is divided into several stories.

Suppose you have to supply an acre of accommodation for some commercial purpose, the whole of the accommodation being of the same character throughout; and suppose the most convenient way would be to arrange it all on one floor. If the site is large enough you would do this, but if it is only a third of an acre you have to divide it into three and place three floors one over the other.

Now you do not do this because it makes a better or more convenient arrangement; quite the contrary. You do not do it because you want to, but because you have to. It is not the strong point, but the weak point of the design; you therefore do not want to say too much about it. It is a fact to be frankly recognised but not unduly emphasised; you do not want to make a song about it. If, then, instead of emphasising each floor with a small Order, you include them all in one large one and express the floors with the windows and other subordinate features, you get obvious facts frankly recognised without undue emphasis; while the large Order, by its scale and treatment, seems to convey a truer suggestion of the unity of the building as a whole, and the nature and relative importance of the commercial concern of which it is the expression.

If, however, the three-floor treatment is a vital necessity of the arrangement—a characteristic feature of this class of building—it would then be proper to duly emphasise the fact by boldly marking the three floors. To do this with an Order for each floor would perhaps be logical, but as a method of expression it seems rather crude and a needless elaboration of the obvious.

### Features Must Mean Something.

If we use this large Order, let us take care that we mean something by it, that it is suggested by the nature of the building, and not by the present tendency to bigness of scale. Rightly used, it seems to be a most flexible medium by which we can draw out from the building the most subtle shades of expression; wrongly used, nothing can be more misleading or better adapted for confusing expression.

Imagine a building of four stories all of the same character and importance, where there is no reason for accentuating one rather than another. To treat the ground floor as a basement to an Order rising through the first and second, and then to put the third in the attic, may produce a pleasing but most misleading effect. But if the different floors have each a separate and distinct character—say the different departments of a Government office—and there is something in the nature of the first and second to suggest that they be coupled together and emphasised, there seems no reason why this should not be done with an Order.

There are many other points, such as the expression by means of a large Order of a hall set back from the front and masked by several floors of small rooms, which it would be interesting to examine if the time at our disposal permitted.

As this paper is not intended to be a study in architectural expression, I will content myself with the suggestion that the principal value of the application of the Orders to modern buildings, taking into consideration our rapidly-changing methods of construction and complicated practical requirements, is chiefly as a means of artistic expression; that used in this way they fulfil a function.

The principle that seems to guide us in their application is that they must in all cases obey the laws of architectural expression, and that a right method of expression is the essential thing. If in so doing they can also fulfil a structural function so much the better, as the expression becomes more complete. They cannot, however, be applied to serve a structural function in defiance of the laws of expression—for the expression, not the construction, is the essential thing.

Perfection of mechanical structure is satisfying only to the mechanician. If it satisfies us, why use the Orders at all? The expression inherent in the structural masses of the building, before the Orders were applied, should be sufficient.

### Expression is the Ultimate Aim.

After all, what is it we would be at? We are artists, not mechanicians. Our aim is not perfection of structure, but perfection of expression. We may need one to obtain the other, but if we strive for perfection of structure it is not for its own sake, but simply as a means to perfection of expression.

I am well aware that in recognising the application of the Orders as an added decoration not structurally required I have laid myself open to the charge of holding the now discredited theory that building and architecture are separate things—that architecture is the decoration you apply to a building, or, as I have lately seen it expressed, building + ornament = architecture.

If I repudiate the suggestion now it is not so much from the desire to forestall criticism as to direct the discussion to more profitable issues.

But, after all, there is something in this point of view—there generally is in every point of view—even, I trust, in mine. To me, this old, unhappy, far-off heresy, which is treated to-day with so much contempt by our superior persons, was but a superficial way of expressing a partially-comprehended truth.

The artistic expression that is inherent in the lay-out and grouping of the structure not being recognised or understood, it was natural that the whole of the expression in the finished building should be thought to be entirely due to the shaping or decorating of the structure which takes place when we proceed to intensify and complete an otherwise imperfect expression. The Orders which we may happen to use for this purpose are not in themselves the architecture. They do not create the artistic effect, they only serve to perfect it, and in so doing they seem to me to fulfil a function."

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At the conclusion of Mr. Jemmett's paper Mr. E. Gunn read a contribution by Mr. R. Pheré Spiers.

**Mr. Spiers**

said the subject was much too vast to be discussed properly in one evening, and he proposed to take up two points only in the paper. Firstly, the dictum attributed to Monsieur Louis Duc, "There is no architect without the Orders." He did not know where M. L. Duc said it or what the preamble was, but he did not think that the students in England recognised the extent to which the study of the Greek and Roman Orders was pursued in the Ecole des Beaux-Arts. It used to be the custom when he was studying in Paris in 1860, and it might still be continued, to give once a year what was called the "*Projet de l'Ordre.*" This consisted of some subject for design, in which one or more of the Classic Orders was to be applied. He said "or more," because he recollected that the first subject he had to take up was a design for two bays of the courtyard of some Government offices, in which the superposition of the Doric and Ionic Orders with arcades between were to be embodied. Two months were given to work out the design, and he remembered that he made himself acquainted with every example known, from the Theatre of Marcellus and the Colosseum to the numerous courtyards in the Italian palaces. The second subject in the following year was for an Odéon or music-hall, with a peristyle round the exterior and a portico on the front to be of the Greek Ionic Order. Here, again, he made a profound study of every Greek temple of which drawings had been published, and, as parts of the building rose above the peristyle and portico, these had to be designed in accordance with the style which necessitated a research into the various accessory buildings of the sacred enclosure, in order to find *motifs* for his design. It was probably to this course of study that M. Duc referred, and M. Duc's view was that a student should make himself the master of the Orders instead of remaining their slave. The other point in Mr. Jemmett's paper was the references made to the use of the colossal Order rising through two or more floors. Generally speaking, the problem was solved by rusticating the masonry of the ground story, so that it made a solid and suitable base to carry the large Order above; if, crowning this, there was either an attic story or, as in Somerset House, a lofty balustrade, the relative heights of these three subdivisions gave scale one to the other.

One of the chief difficulties to be met with in this combination, was the undue height of the entablature of the great Order, which should be a quarter of the height of the complete scheme, viz., including capital and base. This great height tended to interfere with the lintel of the second or upper floor window and the sill of the attic window, and there were some buildings in London in which the architect had cut through the architrave with a window, and utilised the frieze as the supporting member of the cornice. This was a mistake; the architrave was the correct supporting member, but the frieze was only a decorative feature which might be omitted. There was no frieze in the Ionic temples of Ionia, but when the Attic Greeks introduced the Order into the Erectheion they omitted the Ionian dentil bed-mould, and, in order to get sufficient height for the ceiling beams of the east and north porticoes, were obliged to introduce a frieze, and this was necessarily carried round the whole temple; they omitted the frieze, however, in the entablature of the caryatid portico. The omission of a frieze when a colossal Order was employed would lessen by about one-third the depth of the entablature. There was still another treatment of the subject which was employed by Mr. R. Norman Shaw in New Zealand-chambers in Leadenhall-street. Now Mr. Norman Shaw was the grand master of fenestration, and when he was called in to design this building he recognised at once that in this comparatively narrow street more light could be obtained up and down the street than from the side opposite; he therefore applied for permission to project some oriel bow-windows. He was told, however, this was not possible, but if he liked to set back his front then he could project his bow-windows. This his clients objected to, so he asked what proportion of the whole front would have to be in solid brickwork. He (Mr. Spiers) thought he was told one-third. This he contrived in four great piers and a part of the ground story, and between these piers and about 2 ft. to 2 ft. 6 in. back, viz., the required projection for his bow-windows, he sketched in these features, and took his design again to the Metropolitan Board of Works, and obtained permission, provided the woodwork of the windows was kept 4½ in. behind the front of the piers. This regulation was now given up, but in 1873, when this building was erected, all window-frames had to be set back 4½ in. and in recessed jambs, because sometimes when in a Queen Anne building, where the frames were flush with the wall, if a fire took place they fell out and injured the firemen. These various inquiries led to the design of the New Zealand-chambers, which were not only the best-lighted premises in the City, but the grandest and most impressive in design of any of Mr. Norman Shaw's works. These great piers, rising from the ground to the main cornice, had the same dignified aspect as that which was given by the employment of the colossal Order, but, at all events in this case, Mr. Jemmett's statement that it resulted in a "pleasing but most misleading effect" certainly did not apply. He would suggest, therefore, that our students should make a point of going down to Leadenhall-street, now that he had told the story of the conception of these New Zealand-chambers, to see how certain regulations and requirements might sometimes result, in the hands of a master, in an original treatment of the whole subject. As a matter of fact, he believed the bow-windows were not in wood but in iron, so there was no fear of their falling on anybody's head.

**Mr. Alan Potter,**

in proposing a vote of thanks to Mr. Jemmett, said what we had first to get fixed in our minds was, what was an Order, and what was the function of an Order? To his mind, an Order was not structural at all. We could have a series of posts and a lintel across the top, but while that was structural it could hardly be called an Order. The Order was the clothing of the structure with beautiful design, every part of which was in sympathy with every other part, and no part of which was emphasised to detract from the whole; every part suitable in its place, and for that reason making a perfect whole. The function of the Order was not necessarily emphasis; it was the true and beautiful expression of the function of the structure. In his opinion it was quite as reasonable to speak of a Gothic Order as of a Dorian Order; the combination of supports and the arch was as much an Order as the combination of supports and the lintel. What we should try and aim at was to realise the æsthetic function of the Orders in relation to the structure of the ancients, and try and clothe our present-day structures in expression, which would be as suitable to the present day structure as the Orders in the old days were suitable to the structure then.

**Mr. H. A. Hall**

seconded the vote of thanks and referred to the treatment of the Order by Mr. Burnet in the British Museum—though really a modern building, there was an ancient character in its purpose and surroundings—and in a building by the same architect in Aldwych, where the Order was used in a modern way. It was interesting to see the difference Mr. Burnet made in the use of the Order, in the application of which he was a master. Mr. Burnet was showing us how to use the Orders very well indeed. Having referred to the difficulties into which some architects got in the use of the Orders, Mr. Hall said that the great fronts which an architect had to do in a city like London were best left very simple. If one could leave out the unnecessary column and put it in where it was of use it would be much better.

**Mr. W. Curtis Green**

said we ought to think more about the subject than we did. Mr. Spiers said we ought to be masters of the Orders and not slaves to the Orders, and where we made our dismal failures was in being slaves to the Orders, for we never mastered the Orders. He thought that all the men who were doing good work to-day, and who, because they wanted to emphasise an important point, took exception to the use of the Orders, were all masters of the Orders themselves. He could not help thinking that we should make a great mistake if we gave up drilling ourselves in the Orders at a time of life when we ought to be drilled in something. He had the good fortune to go through the Royal Academy Schools, and he had to take the examination twice because he failed the first time. That was a great advantage, because a student had to draw the Orders from memory, and if one had learnt them twice over at an interval of six months that gave a very sound foundation, for things were not forgotten when learnt in that way. He had been impressed with the scholarly work done in Berlin and Vienna, and on studying that work he could not help feeling that it would be a good thing if we had a dictator for architecture in this country who would lay down the law that no three-quarter columns and no pilasters were to be used for ten years.

**Mr. A. G. R. Mackenzie**

said that a piece of architecture was like a piece of poetry, and an architect had the same licence that a poet had, and could emphasise those points which he wished to emphasise from an artist's point of view. If one remembered this one could use the Orders in a proper way. If, on the other hand, one used the Orders to emphasise structural points without thinking of the expression one wished to convey in the building, one went wrong in the use of the Orders. He could not agree with Mr. Hall that the use of columns should be limited to the entrance doorway; it was not always desirable to emphasise the doorway.

**Mr. L. F. Jones**

said the whole subject of town design, for London particularly, must resolve itself into the question of fenestration, and it was in the grouping of the windows with the piers between that gave the means by which we could give expression to buildings. It was rather by the grouping of the windows that we got the scale of the building, and there was a good example of that in Whitehall—the new Woods and Forests building, where the front, which did not face on Whitehall, was happily designed with the use of Orders. In ordinary town buildings—not museums, etc.—he thought it was a great pity that so many men were making use of colossal columns. There were one or two buildings about Regent-street in which the columns seemed to go into the sky and took the whole effect of the building, the windows—the most important part to the layman—being subsidiary. These huge columns, necessitating overhanging cornices, were most unsuitable in London. If more attention were paid to the grouping of windows in buildings—particularly where the material was poor, as in the case of brick and the amount of money available was not great—we should get much finer street effects.

Mr. V. R. Talvalker and Mr. D. A. Forster having spoken, Mr. A. L. Snow said Mr. Jemmett rather overlooked the entablature, and it seemed that the greatest trouble in town buildings was over the entablature.

**The Chairman**

then put the vote of thanks to the meeting, including a vote of thanks to Mr. Phené Spiers for his remarks and the drawings he had sent. He (the Chairman) always wondered what the old Greeks, if they could visit modern countries, would think when they saw how the Orders were used. They would be nonplussed, and would fail to see what the purpose was. It seemed to him that the Greek use of the Orders was the only sane one. Our general corruption of the use of the Orders as a method of expression was not a very creditable one. Columns should not be used unless they were isolated, as in the case of the Piccadilly screen at Hyde Park-corner, where the column was used in a proper way, as it was in the British Museum. He did not think it right to apply columns to walls and make them part of the wall, especially when the entablature was carried along the wall. Mr. Jemmett had treated the Order as though it were a matter of æsthetic expression altogether and not a matter of structure at all, and that seemed to be the only way in which it could be defended in its generally accepted use in modern buildings.

The vote of thanks having been agreed to,

**Mr. Jemmett,**

in reply, said fault had been found with the point of view that expression and not structure was the main thing. He knew that was not an orthodox sentiment, but what he meant was that while they might have structural perfection they did not do it for its own sake. A builder or an engineer might put up an absolutely perfect bit of structure, but that was not architecture at all. A structure began to be architecture when they arranged it so as to express emotion and sentiment and human feeling. It was the arranging of the structure that made it architecture. If one put up a row of columns it was not architecture. They would mean nothing but a row of columns unless they were arranged to serve human purpose and express emotion; then they began to be architecture. The arrangement of plan was the first method of expression. Take a Greek temple; the plan and the arrangement expressed the function of the building, and the art began when the artist began to arrange it. The art did not begin in knowing how to construct a column. The Greeks put their columns up in a way which fulfilled the structural purpose, but the height of expression was given by, say, the flutings of the columns; the columns carried the weight, but the flutings told the fact more quickly. The mere fact of putting the stones together to carry the weight was the mechanician's part; architects used the structure to express their feelings, and if they did not they could leave it all to mechanics and engineers. If expression were not the thing—the expression of human feelings and sentiments—there would be no need for architects. Mr. Potter said he (the speaker) looked to the Orders as the only method of expression, but that was not what he meant to say. He did not hold a brief for the use of the Orders. He did not say there was any need to use them, but if they wanted to, and did use them, that was the only way to use them. There were many other ways of expressing the buildings without using the Orders. In Gothic work it was expressed perfectly without any Order whatever. He agreed as to the importance of fenestration for the reason that if one put the Orders into a London shop-front one was overdoing it from his point of view—*i.e.*, expressing too much, and giving a shop more importance than it deserved. In a city masses of plain work were wanted to show off the ornamental work. Commercial buildings should be kept in their proper place, and should not assert themselves too much, and the Orders should be left for public buildings or intersections of street-fronts. In regard to Mr. Hall's point as to emphasising the entrance to a building, to put columns in to express the fact that it was a door was a structural expression, but to use them just to get what one thought was a more

beautiful proportion was another matter. If that particular proportion added to the expression, well and good; if not, it was wrong. One ought to design a building to serve its structural purpose, and then to give expression to the building, but not one's own expression. Architects were impersonal artists, and they had to draw out of the building the character of the building, and not to put into the building their own character at all.

The Chairman announced that the next meeting will be held on March 20, at 7.30 p.m., when a paper will be read by Mr. A. M. Brice, entitled "The Legal Authority of the Architect as an Agent" (combined meeting with the Camera, Sketch, and Debate Club).

### THIRD SPRING VISIT.

For the third time in succession the Association was indebted to Sir Henry Tanner, of H.M. Office of Works, for permission to visit the building selected—in this instance, on March 4, the Central London Recruiting Depôt, Great Scotland Yard, which has been erected to take the place of St. George's Barracks. The latter building will shortly be pulled down, with the praiseworthy object of isolating the National Gallery from external fire risks, and some stables belonging to a private owner similarly displaced have also been rebuilt on a portion of this site.

The new building is quadrangular in plan, the ground floor court being covered in with a glass roof as an exercise and assembly ground. In the basement (of the type which in City offices would be called lower ground floor) are extensive bath and lavatory accommodation, boiler house, disinfector, etc., and an independent section on occasion devoted to a reserve force of the Metropolitan Police. The main entrance approaches the ground floor by an internal flight of steps leading direct to the covered court, or on either side to the coffee and recreation rooms, and to the inspection and preliminary examination rooms for recruits. On the first floor are attestation rooms (above the inspection rooms) and Sergeants' Mess; the second floor has quarters for the Commanding Officer and Staff; the third floor accommodates the Garrison Sergeant Major, Staff Sergeant, Pay Clerk, and Canteen Sergeant; the remainder of first, second, third, and fourth floors being devoted to cubicles for about 140 recruits, arranged in sections, each under the supervision of a N.C.O. The building is of fire-resisting construction, composed of steel beams, with small cross-joists encased in 6 in. of breeze concrete. The cubicle divisions are of thin concrete slabs plastered, and their floors of Euboeolith, most of the remaining floors being covered with maple blocks. Externally, the fronts, faced with Crowborough bricks and Portland stone, are so designed as to impart a pleasing, homely feeling—the "cheerful, liberal look" of Charles Lamb, quoted by Mr. Newton in his recent paper in praise of brickwork. The whole of the internal faces of the court are lined with white glazed bricks, and free use has been made of salt glazed dados throughout—expensive at first, but a manifest economy in upkeep.

The stable buildings adjoining are of similar materials and construction. Seven stalls and fourteen loose-boxes are on the first floor, approached by a sloping way 7 ft. wide and rubber-paved gallery. Above are grooms' and coachmen's quarters, and, on the ground floor, coach house, harness room, etc. Mr. Dyke, of H.M. Office of Works, very kindly conducted the party over the buildings, for the execution of which he has been responsible.

## ARCHITECTURAL SOCIETIES.

### Manchester Society of Architects:

SICILY.

At a meeting of this Society on the 23rd ult. Mr. Ronald P. Jones gave a lecture on Sicily. The two great architectural epochs of Sicily—that of the Dorian civilisation of the Vth century B.C., and the Norman of the XIIth century A.D.—were illustrated by excellent slides.

In the course of his remarks the lecturer said that architects are too apt to regard Greek architecture as a matter of modules and profiles, to study it in the adequate line diagrams of the text book. Construction, materials, and building methods are frequently ignored, and the buildings are generally studied in parts rather than as a whole. Consequently the variety of the actual work is seldom realised. We are too apt to gauge Greek architecture only by the Athenian masterpieces.

The Sicilian colonists represented no more adventurous and vigorous members of the mother community, and founded cities far more populous and magnificent than those of their birth.

The Temple of Segesta forms a good introduction to the study of Sicilian Architecture. Its splendid isolation among the limestone hills, its restrained and reposeful style, provide an extraordinary instance of a weight of effect obtained by simple means. Here we find imposing scale and sombre magnificence, where all the refinements of detail are absent. It has come down to us as it left the hands of the builders, perfectly preserved, but still unfinished, for the building operations were rudely interrupted by invasion in 409 B.C. This being so, it forms one of the most lucid illustrations of Greek methods of building. The peristyle was built before the cella, and the flutes were added after the erection of the drums.

The rough local limestone of which the Sicilian temples were built was faced with a film of marble stucco, in which the mouldings and refinements were worked. This fine surface was polished and coloured. The Greeks had not the modern appreciation for the beauty of material in itself, just as they had not our love of natural landscape. To them Pentelic marble was the best building material available, insuring the highest possible finish. In Greece and Sicily the blaze of pure white marble is too dazzling, and the subtleties of form and light and shade cannot be appreciated unless the material is toned down with colour. The Greeks aimed at the highest possible finish, and looked upon joints as evils to be concealed by every possible means. Accordingly, in Sicily, by veneering the rough, porous material, the difficulty of jointing was eliminated, and a monolithic appearance obtained. In order to understand these Sicilian temples we must visualise their gay and decorative effect, their veritable blaze of colour, set among luxuriant groves.

The remains at Girgente are placed in surroundings less tragic and isolated than those of Segesta. One of the largest and most luxurious of the city-states of the ancient world, Girgente, with its population of 400,000 inhabitants, exceeded even Athens itself in scale and magnificence. The traveller, approaching from the sea, beheld a group of buildings of almost unparalleled splendour. Seven great temples crown a long narrow ridge of rock 1½ miles in length and 300 ft. above the plain. The Greeks took advantage of the natural site, and did not level the rock, as the Romans would have done. The great building period was from 480 to 410 B.C. In the Temple of Concord we have one of the best preserved of Greek buildings, in that of Zeus the most colossal, and one of the few failures, the scale being beyond the possibility of the style.

Slides were shown of Syracuse and Taormina with its unrivalled view; and the lecturer then passed on to Palermo, and contrasted the internal magnificence of the mixed style of the XIIth century, as seen in the Capella Palatina and Monreale, with the external architecture of the earlier Greek civilisation. The beauty of these mosaics with their wealth and colour and logical treatment is unsurpassed.

Those who have not been to Sicily cannot realise its charm. To one who has been there, the name of Sicily has an attraction before which even Italy must take second place.

Messrs. Dunkerley, Healey, Corbett, Professor Capper, and the President, Mr. Percy Worthington, took part in the discussion which followed.

THE PRESERVATION OF ANCIENT BUILDINGS.

On Wednesday, the 1st inst., Mr. W. A. Forsyth, F.R.I.B.A., read a paper entitled "Notes on the Preservation of Ancient Buildings." The lecturer opened by remarking that the preservation and restoration of old buildings is an important subject for the attention of architects. When the opportunity occurs, architects may not always be ready or skilled in the treatment of the problem. Conservative methods are at all times necessary, imported material always unhappy, and native material invariably satisfying. Mr. Forsyth then proceeded to speak of the principles that should be observed in the renovation of an average village church or manor-house. First, as to what should be preserved. All that is fit and sound, apart from considerations of taste and fashion and often of convenience, should be retained. It is always possible to make full use of a mediæval church for the purpose of worship, and it is no hardship to adapt one's mode of living to an old house. The Town Planning Act respects ancient monuments, even if a good scheme is interfered with by the position of an historic building. Second, as to the means of carrying out the actual works. Restoration should have enduring qualities. It is pathetic to see the Victorian restoration of an historic London church renewed at this early date. All works should be given ample time in execution. Accurate drawings of the building should be made, showing all the irregularities. And he advocated the use of freehand drawings. A ruled plan cannot be accurate. The specification should be complete in every detail, and photographic records are valuable. Tenders should be avoided. He knew of no more satisfactory method than a 10 per cent. profit arrangement. Coming to the actual operations, Mr. Forsyth dealt in turn with each part of the work. Rubble walls, he said, are largely misunderstood to-day. It is usual to point them; but as a rule no pointing is required, except in the dire extremity of the solid materials having become loose. The difficulty of making either plastering or pointing adhere to rubble is not realised. There are three distinct schools in the preservation of stonework to-day. The first might be called the "Limewashers." There is strong sentiment amongst them against attempting to repair in the actual form and material of the original; if a stone mullion is crumbling, it is repaired with brick or tiles, and the place smeared over with mortar. They are anxious that their patching should reveal itself for all time. To a certain extent this school is justified by the glaring results of the second, the "Replacers," whose entire creed is to "cut out and replace with new to match." The third school is that of the "Fakers," whose delight is to deceive and to remove all evidence of renovation. It is difficult to say which process is the most desirable. Mr. Forsyth proceeded to give instances of each method. At Westminster a great work of "limewashing" is being carried out by Professor Lethaby, the decay of the stone being arrested by the application of limewash; some colouring is utilised to assimilate the applied material to its environment. The use of the same methods of construction as obtained in the original building was advocated, such as the cutting of the mouldings on groin ribs *in situ*. After dealing exhaustively with the use of wrought-iron tie-rods and warning architects against the use of metal in association with stone, concrete, or brickwork, Mr. Forsyth spoke of the treatment of roofs. Machine-made tiles should be entirely excluded. English oak, he said, is the only timber. In repairing old roofs, all work should be done in position, to avoid the taking down of old rafters, tie-beams, and purlins. Old seasoned material should always be employed. In plastering, slow-setting limes should be used.

### Leeds and Yorkshire Architectural Society:

MINOR DOMESTIC ARCHITECTURE IN YORKSHIRE.

A general meeting of the Society was held on Thursday, February 23, Mr. Sydney D. Kitson presiding, when Mr. Harold Henderson, of York, read a paper on "Some Minor Domestic Architecture in Yorkshire." Confining his remarks to an analysis of the composition and detail of the buildings of the dalesmen, Mr. Henderson said that these Yorkshire homesteads bore probably to a greater extent than in any other district in England the impress of the individual, the strenuous and unbending character of a race who lived in a generation of fierce and strict Puritanism. The houses were sturdy and strong, standing four square to the weather, perhaps in some cases grim and stern, testifying to the reserve of their owners in high unbroken walls, yet displaying, nevertheless, in occasional grotesque or quaint finial a dry wit as a tonic and saving grace. The great majority of the houses were of the XVIIth century owing to the great number of gentry who lived on the produce of the land at that time. The characteristic features peculiar to these Yorkshire buildings were dealt with in detail in the description of a typical house with single span

roof, an occasional gable ornamented by finials, a projecting porch with quaint doorway, and fully illustrated by a series of studies and sketches by Mr. Henderson. At the close, a hearty vote of thanks was proposed by Mr. C. B. Howdill, A.R.I.B.A., and seconded by Mr. R. W. Thorp, A.R.I.B.A.. Briefly responding, Mr. Henderson urged the closer study of the type of building of which he had spoken to the end of reviving the Yorkshire Domestic Tradition—an influence now unfortunately almost extinct.

### The Royal Institute of the Architects of Ireland.

An ordinary meeting of the Council of this Institute was held at No. 31, South Frederick-street, Dublin, on Monday last. The Vice-President, Mr. R. Caulfeild Orpen, F.R.I.A.I., was in the chair in the unavoidable absence of the President. There were also present Messrs. J. H. Webb, W. Kaye-Parry, Frederick Hayes, C. J. MacCarthy, A. G. C. Millar, Charles H. Ashworth. Lucius O'Callaghan, Frederick Batchelor, Harry Allberry, G. P. Sheridan, and C. A. Owen, Hon. Secretary. A considerable amount of correspondence was dealt with. The Professional Practice Committee brought forward an amended letter of invitation to tender, which was ordered to be circulated among the members of Council and put on the agenda for discussion at the next meeting.

### Glasgow Architectural Craftsmen's Society:

FRENCH ARCHITECTURAL MASONRY.

At a meeting of the Glasgow Technical College Architectural Craftsmen's Society, held in the College on March 3, Mr. James S. Boyd, Licentiate R.I.B.A., read a paper entitled "A Study of French Architectural Masonry." The organisation of the workmen and the conditions of labour in a first-class mason's yard in Paris were described and compared with similar yards in this country. Over one hundred photographic slides, showing the construction of domes, vaults, skew-arches, bridges, etc., in Paris, Versailles, and Rouen were exhibited and described. The speaker stated that the boldness in this French masonry construction was traditional, just as caution or a lack of boldness was traditional in British work. In concluding, the opinion was expressed that architects in Britain should be trained thoroughly to master the practical application of geometry to building work, so that they (as master-craftsmen) may assist the actual workman in solving any difficult constructive problem that may arise in the carrying out of the design of the master-mind.

## ENGINEERING SOCIETIES.

### Junior Institution of Engineers:

ROYAL AUTOMOBILE CLUB BUILDING.

At the last meeting of this Institution, held at the Royal United Service Institution, Whitehall, it was announced that the vacancies caused by the regretted death of Mr. Nisbet had been filled by the appointment of Mr. B. E. Dunbar Kilburn, as Chairman, Mr. Percy L. Young, as Vice-Chairman, and Mr. Reginald Krall, as member of Council.

The meeting was a combined meeting with the Architectural Association to assist in the discussion of a paper on the architectural and engineering features of the Royal Automobile Club building, which was read by Mr. S. Bylander, the engineer (Vice-Chairman of the Institution). In the first part of the paper the author dealt with the points of architectural interest in connexion with the façade, east and west entrances, and the interior of the building, including entrance-hall, elliptical vestibule, east and west corridors, main staircase, etc., passing on to the features appertaining to the first and second floors, and the basement floor, including swimming-bath, Turkish-bath, etc. In describing the engineering features of the building, the author pointed out that skeleton framing or cage construction had been adopted as far as was consistent with economy. Preliminary drawings and calculations were made to ascertain the cheapest and best type of construction, consistent with the architectural requirements. Two sets of calculations were made for the steel work, one approximate, in connexion with the skeleton plans, and the other accurate and final for the working drawings. An elaborate system of marking the different steel pieces was adopted for the purpose of speed and accurate erection. The paper was fully illustrated by an appendix of twenty-four plates, some of them reductions of the working drawings. The architects for the building were Messrs. Mewes & Davies and E. Keynes Purchase, referring to whose work the author said that architecturally the club must take an important position among the many fine buildings in Pall Mall. An interesting discussion followed in which the Chairman, Mr. Gerald C. Horsley (Vice-President of the Architectural Association), and Messrs. J. H. Pearson, C. G. Gage, P. L. Young, A. G. Young, R. Marshall, W. A. Tookey, and E. J. Daniell took part.

[For further details of this building, see page 306.]

## GENERAL NEWS.

### Appointment.

Mr. James Grieve, A.R.I.B.A., of Liverpool, has been appointed chief assistant in the Sheffield City Architect's Department in the place of Mr. J. Rycroft, resigned.

### The L.C.C. Schools.

The news that Professor W. R. Lethaby, F.R.I.B.A., is relinquishing his duties as Principal of the London County Council Central School of Arts and Crafts has been received with regret by those who have watched the progress of the various departments under his care. We hope his experience will be still available, for, as a visitor, his assistance would be much appreciated. The new Principal will be expected to give the whole of his time to the work of the schools, and the annual salary is fixed at 1,000*l*. "In addition to high qualifications as a practical artist," runs the advertisement, "administrative and organising ability is essential. The Principal must also be in touch with the industrial application of the work of the school." In the development of the possibilities of technical education, Professor Lethaby's successor will have unlimited opportunities for enterprise.

### The Approach to Holyrood.

Professor G. Baldwin Brown, writing to the *Times* on the subject of "The Approach to Holyrood," makes a plea for the use of the Canongate as a processional road. He points out that the Palace is very well situated in regard to access. Excellent roads without objectionable gradients lead through the park to the south and east, while up Abbey Mount and along Easter-road there is a good line to the seaport on the north. For communication with the city, and for all purposes of ceremonial approach and departure, there is one proper road of access and one only, and that is along the familiar route of the High-street and the Canongate. Considerations of convenience, of topography, of historic association, and, he says, of the pleasure of august visitors who may favour Holyrood and Edinburgh with their presence are all involved in this. The common sense, the good taste, and the broad, one might almost say the democratic, sympathies of our Royal Family give quite enough assurance that the members of it would much prefer being driven up and down the Canongate than round by Abbey Mount. Most happily the long line from the Castle to Holyrood is still open and accessible from every part, and there is no duty more incumbent on the citizens than to assist in gradually raising the social condition of the poorer parts of the town by the various agencies available. The name of Patrick Geddes will deservedly be held in honour for the practical measures he has taken with this aim, by settling communities of the well-to-do among the Old Town tenements, and now by turning waste plots in among the houses into little gardens for the children. There is nothing that helps more potently in this process of gradual social regeneration than running a stream of traffic through a poor locality. The improvement made in its neighbourhood by Shaftesbury-avenue in London is a case in point. If the character of the Canongate were permanently raised by making it a Royal access this would be incidentally a very good kind of memorial to the late King Edward. We must remember that the buildings, though gaunt and old, are by no means squalid. There is no "tumbledown" property, and no eyesores, while every foot of the way suggests the associations which link the old Royal residence to the city.

### The Guinness Trust.

The annual report sets forth that the Trust now possesses a capital of 425,076*l*., and that the surplus income for the year 1910, with provision made for depreciation, amounted to 14,023*l*. 3s. 3d. On the last day of the year there were 9,375 persons living in the buildings, which provide 2,574 separate dwellings, containing 5,338 rooms, with laundries, club-rooms, and sheds. The average weekly rent of each room was 2s. 1¾d., which covers chimney-sweeping, with the use of common-rooms, baths, and hot-water supplies. The average weekly earnings of the head of each family in residence, when admitted into the buildings, was 18s. 10¾d.; only those persons are accepted as tenants whose average income does not exceed 25s. per week.

### The Prudential Assurance Company, Ltd.

In the sixty-second annual Report for the year ending December 31, 1910, the Directors of the Prudential Assurance Company state that in the ordinary branch the number of policies issued during the year was 80,311, assuring the sum of 7,462,496*l*., and producing a new annual premium income of 446,473*l*. The premiums received during the year were 4,806,121*l*., being an increase of 96,014*l*. over the year 1909. The claims of the year amounted to 3,240,957*l*. The number of deaths was 8,465, and 19,157 endowment assurances matured. The number of policies in force at the end of the year was 903,896. In the industrial branch the premiums received during the year were 7,426,317*l*., being an increase of 254,547*l*. The claims of the year amounted to 2,805,069*l*., including 222,506*l*. bonus additions. The number of claims and surrenders, including 4,600 endowment assurances matured, was 371,023. The number of free policies granted during the year to those policyholders of five years' standing and upwards who desired to discontinue their payments, was 145,187, the number in force being 1,608,935. The number of free policies which became claims during the year was 42,660*l*. The total number of policies in force in this branch at the end of the year was 18,820,427; their average duration exceeds eleven and three-quarter years. The assets of the Company, in both branches, as shown in the balance sheet, after deducting the amount written off securities, are 77,529,226*l*., being an increase of 3,327,525*l*. over those of 1909.

### Heating and Domestic Engineers' Association for Birmingham and the Three Counties.

At a meeting of engineering employers in the above-named trades held at Birmingham on March 3 it was resolved to form a branch association of the National Association of Master Heating and Domestic Engineers to cover Birmingham and the three counties of Warwick, Stafford, and Worcester. An Organising Committee was elected, consisting of Mr. John P. Achurch (Parker, Winder, & Achurch, Ltd.), Mr. Charles Barter (Benjamin Parker, Ltd.), Mr. G. N. Guest (Hollings & Guest, Ltd.), Mr. J. Jackson (J. Jackson & Co.), and Mr. W. L. White, 82, Upper Trinity-street, Birmingham, the last named being Convener. The new branch association is to promote and forward the interests of heating and domestic engineers in the area above named, and to be affiliated with the National Association, whose headquarters are at 12, Great James-street, Bedford-row, London, W.C. (Mr. H. B. Watt, Secretary).

### Cooper's Hill College, Surrey.

Having been closed for nearly five years past, the Royal Indian Engineering College and grounds have been sold by the Secretary of State for India to Lady Cheylesmore. The grounds and farm-lands cover about 115 acres; the buildings comprise a chapel, eight private residences, lecture-halls, gymnasium, farm-buildings, etc. The college was built after the plans and designs of Sir M. D. Wyatt (illustrated in our number of August 5, 1871), having been founded as an engineering school mainly through the instrumentality of Sir George Chesney; telegraph and forestry departments were subsequently formed, and additional workshops and laboratories were erected. The six stained glass windows and six memorial brasses in the chapel were presented to Egham Parish Church in May, 1907.

**H.M.'s Stationery Office, Westminster.**

It is announced that, having regard to the recent demolition of property in and around Great George-street and to the need thereby occasioned for the reinstatement of institutions and business firms in that same locality, the authorities are about to relinquish the site now occupied by the Stationery Office, for which more commodious premises will be erected upon the Duchy of Cornwall estate in Lambeth. The Stationery Office in Prince's-street was built in 1854, after plans and designs by Sir James Pennethorne, on the site of Lord Milford's house, which had been altered for that purpose some thirty years previously.

## SANTA MARIA DELLA SALUTE.

SKETCHES by artists have always been, and are, of great interest to other artists, many fine collections having been formed at various times. Sir Thomas Lawrence's is famous in the annals of art, and Mr. Heseltine's is notable among present-day collections. In recent years appreciation of sketches has steadily grown among outside patrons—those who buy but do not themselves practice in any branch of art. This is proved by the success of the sketch section of the New English Art Club, the interest taken in the newly-founded Sketch Society, which draws its members from the Langham and similar clubs, and by the appearance in many one-man shows of the early notes from which pictures are built up afterwards.

There is so much to attract in original sketches that it is not surprising that publishers have ventured to produce reproductions; a memorable instance was the beautiful series of facsimiles after drawings by Jean François Millet issued a few years ago. But such enterprise is almost unknown in the case of prints after sketches by living men, and we are pleased therefore to call attention to the successful reproduction in colours of Mr. John S. Sargent's "The Church of Santa Maria della Salute, Venice," the painting which was bought by Mr. Otto Beit, for the Johannesburg Art Gallery, after attracting much admiration at the Exhibition of the New English Art Club last summer.* It is shown on p. 289.

This colour print is published by the Berlin Photographic Company, and it represents, with remarkable faithfulness, the beauties of Mr. Sargent's sketch. All the spontaneity of the original work is here, and students of painting may observe the technical mastery displayed by the great artist. It is, however, for its architectural significance that this photogravure in colours appeals chiefly to us. We are impressed by the play of light on the well-known features of the church, and we realise how sympathetically the painter has suggested the noble qualities of the entire building.

As we said a few years ago, Mr. Sargent has it in his power to be the finest painter of architectural effects we have had; if so far he has not completely fulfilled that promise the reason has been probably that his portrait work has monopolised his time. Moreover, his big decorative compositions for the enrichment of the Boston Library have required his attention. Last year's Academy being without portraits from his brush, the rumours seemed justified that he had given up his regular work in that direction, and many hoped that he would develop his extraordinary instinct for treating architecture with pictorial grandeur.

We look forward therefore to the day when Mr. Sargent will take up his brush and work at the interpretation of architecture in its completeness in the way that Canaletto, Turner, and other painters have sought to portray it in the past.

* Facsimile in colours of "The Church of Santa Maria della Salute," 14¾ by 21¼ inches. Proofs, signed by Mr. Sargent, limited to 100, price 6*l.* 6*s.* each. Prints, unsigned, eventually to be issued at 2*l.* 2*s.* each.

## CORRESPONDENCE.

### The New St. Paul's Bridge.

SIR,—The architectural profession are taking a keen interest in this bridge.

I think it would be satisfactory to all parties if a public competition were at once initiated by the Corporation, confining the designs to British subjects.

This would enable a unique collaboration of engineer and architect, the designs being subjected to the criticism and approval of persons eminent in the artistic world.

W. ARTHUR WEBB, A.R.I.B.A.
*Junior Conservative Club.*

### Licentiates R.I.B.A.

SIR,—I really think it is time that the Associates made some sort of objection or fight against the subtle encroachment of the Licentiate class.

I do not suppose many have any objection to the Licentiates as Licentiates, though the general public will possibly think a Licentiate a better class than an Associate. But the open invitation to become Fellows at a very small amount of trouble is a direct blow at the trouble and expense that Associates have been put to in passing the apparently useless exams.

Many of these Licentiates are young men, who had just the same chances of passing the exams. as ourselves.

I say, let them be kept Licentiates unless they are very exceptional men or pass an exam. on the lines of Associate.

It takes all the "go" out of the business for the students and probationers.

I daresay that the Licentiate class will be extended from year to year. "Positively our last sale this year."

What if an Associate club be formed, to "go for" the R.I.B.A. policy, and what if all Associates refuse to become Fellows, as a protest? ASSOCIATE.

SIR,—All registrationists must be glad to hear of the intention of the R.I.B.A. to proceed with the drafting of a Bill for the statutory qualification of architects immediately on the expiry of the time limit for the admission of Licentiates.

In your Note on "Licentiates R.I.B.A." in your issue of the 3rd inst. you say, "That step would improve architectural education throughout the country, as the only method by which an architect could begin practice would be by becoming a member of the Institute by examination." It is acknowledged that under registration education would be improved, and that is the chief aim of the true registrationist; but it does not necessarily follow that "the only method by which an architect could begin practice would be by becoming a member of the Institute by examination."

Your Note states that the R.I.B.A. "would proceed to draft a Bill for the statutory qualification of architects, so as to put them on the same plane as doctors and lawyers—in other words, to close the profession to persons other than those duly qualified." In neither medicine nor law is the qualifying examination left entirely to any one society, and if architects are to be put on the same plane as doctors and lawyers due consideration must be given to existing examining bodies, and, failing an arrangement between these bodies, a general council, somewhat similar to the General Medical Council, appears to be the only possible alternative which would stand any chance of becoming law. In fact, it is obviously undesirable that any body or society forming or representing a portion of the profession should have permanent independant powers of examination, and there are many architects at present unattached to any professional society whose interests would have to be represented on any body or council which might become, by law, the managing authority of a registered profession.

H. GUICHARDE TODD.

## INTERCOMMUNICATION COLUMN.

### Party Wall.

SIR,—I am the owner of a house valued at about 450*l.*, which is at present one of two, and both semi-detached. A gentleman desires to have built a similar house on the next plot, and utilise my side wall as his only partition. This will make my house the middle one of three at least, and also take away, to a certain extent, the light from my drawing-room, kitchen, and scullery.

I should therefore esteem it a great favour if you could inform me through the columns of your excellent journal, what would be a reasonable sum for him to pay me for this concession, and also to compensate me for my loss.

My house is one story only, and the side wall in question is 28 ft. in length.

Could you also kindly tell me what, in your opinion, is the difference in value, if any, of a house in a terrace with a back way, against a similar house, semi-detached, with a side entrance? NOVICE.

*** "Novice" has probably no ground for claim in the matter of light. Half the cost of the wall, as far as used by his neighbour, should be paid for at the present building value.—ED.

### Damp Wall.

SIR,—Your correspondent, Mr. P. J. Rawlings, does not state thickness of walls or whether they are hollow, so that one is not sure of all the facts.

From considerable experience in this matter I should say the cause is condensation, which shows in large patches in new houses, especially when the walls have been papered or distempered so soon.

In this case the patches appear when damp, mild weather follows cold weather, and disappear rapidly on a bright, breezy day, and also show partly on inside walls; whereas if patches are caused by penetration of rain, they dry out slowly.

Diagnosis is sometimes difficult from the fact that a wall facing a wet quarter is generally the worst, because the driving rain has made it colder (not necessarily penetrated).

No new wall, even if "dry," is safe for decorating under two years, and if done earlier causes this alarm. When once it has appeared it reoccurs, and paper or distemper should be thoroughly washed off, surface dressed with some solution, and, in due course, redecorated. T. R. HOOPER.

### External Cementing.

SIR,—In answer to your correspondent, I may say I am not surprised at the results obtained from this method of executing external plasterwork. The best way out of the difficulty would, in my opinion, be the following suggestion:—First, entirely strip off present plasterwork to brickwork, then render with Portland cement gauged in the quantities of two parts of clean washed sand (not sea sand) to one part Portland cement. After this has got thoroughly set and hard, finish with neat Keene's cement, or with Brother's patent cement, which is equally as good. I think if "Whitby Bros." will pursue this course they will find a permanent cure. E. R. L.

## FIFTY YEARS AGO.

**From the *Builder* of March 9, 1861.**

### The Decision on the Designs Submitted for New Opera House, Paris.

WE must not say anything to check the progress in England which may have accrued from the frequent applications to architects, after a competition, to assist committees in a selection; but the present case, we think, demonstrates something more than the fact that an absolutely perfect decision cannot be looked for. Seeing that in this country the slightest possible influence is allowed to the professional element in the award, certainly it is pleasing to see, as in France, an instance in which the jury has been formed entirely of architects, with the exception of the president. We must not, however, omit to record that the experience shows that error may thus be committed in the opposite extreme. The writers in the French journals are beginning to see this; and they ask why the jury did not include the names of persons acquainted with the management of the scenery, with that of the lighting and ventilation, and with other details of the theatre, whether of the stage or of the auditory and the modes of access and egress, which are of the nature of things wherein the professor of a special art might well be expected to add to his means and knowledge from the results of practical experience and the scientific attainments of others. The whole question of the relations between architects and those from whom they receive "instructions"—those who are supposed to know what they want, and who certainly have some peculiar advantages for knowing—and the relations between architects and men of general scientific qualifications, is a very curious and difficult question.

## EDITORIAL SUMMARY.

The leading article this week is on "The Artistic Development of London," drawing a different moral from a tale told by Mr. Paul Waterhouse in a paper recently read before the Royal Institute of British Architects.

A second leading article (p. 290) deals with the Traffic Report. It gives an historical summary of London road-making, and points out that artistic considerations need not be neglected.

In "Notes" (p. 292) will be found: "Conservation of the National Water Resources"; "Bridge Portals"; "Lockleys, Welwyn."

A notice of the Water-Colours Exhibition is given (p. 293).

A *résumé* of a lecture before the Birmingham Architectural Association on "Modern Churches," by Mr. Charles Spooner, is given this week (p. 293), illustrated. Some inset plates are given in connexion with the report.

"The Functional Application of the Orders to Modern Building" was the title of a paper by Mr. A. R. Jemmett read before the Architectural Association on Monday (p. 297). The main idea of the paper was that structure was not architecture until it was so arranged as to serve human purposes and to express emotion and sentiment and human feeling.

Under the heading "Architectural Societies" (p. 300) will be found two reports of meetings of the Manchester Society of Architects, giving brief notices of lectures on (1) "Sicily"; (2) "Preservation of Ancient Buildings."

A brief account of the visit of the Architectural Association to the Recruiting Station and Stables, Whitehall, is given on p. 300.

The Monthly Review of Construction (p. 305) contains: "Notes on Some Definitions Used in Structural Mechanics.—II."; "Architectural and Engineering Features of the Royal Automobile Club"; and "Notes."

The Building Trade Section (p. 309) includes: "Scaffolds for Steel-Frame Buildings"; "London Master Builders"; "Master Builders' Associations"; "Incorporated Clerks of Works' Association Dinner"; "Applications Under the London Building Acts"; "Projected New Buildings in the Provinces."

The Carpenters' Hall lecture on Wednesday, March 1, was by Mr. Arthur Keen, who gave an interesting address on "Joinery in Old London" (p. 314), illustrated.

A short report of a lecture at Carpenters' Hall by Professor Vivian B. Lewes on "Fire and Fire Risks" appears on p. 316.

A short article on "Southport Elementary School Competition" appears on p. 316.

An illustration of the new Devonshire Statue in Whitehall is given on p 318.

In our Legal Column (p. 318) will be found notes on "Water Board's Stop-Cock Boxes"; "A Decision under the Public Health Act, 1907"; "Building Line"; "Water Supplied to Trade Premises."

## MEETINGS.

FRIDAY MARCH 10.

*Royal Sanitary Institute (Lectures for Sanitary Officers).*—Dr. E. J. Steegmann on "Elementary Science: Physics, Chemistry"—III. 7 p.m.

*Birmingham Architectural Association.*—Lecture by Professor Selwyn Image.

*Queen's College, London.* — Professor A. Wallace Rimington, R.B.A., on "The Building of a Picture." 3 p.m.

*South-Western Polytechnic Institute, Chelsea.* — Sir Alfred Keogh, K.C.B., LL.D., will present prizes and certificates to students of evening classes and day college. 8 p.m. Laboratories and workshops open to public inspection at 9.15 p.m.

SATURDAY, MARCH 11.

*Junior Institution of Engineers.*—Visit to Messrs. Whitbread & Co.'s Brewery, Chiswell-street, Finsbury, E.C. 3 p.m.

MONDAY, MARCH 13.

*Royal Institute of British Architects.*—(1) A special general meeting: the Chairman to move the following resolution: "That the Council be authorised to arrange with the Bankers of the Institute for an overdraft of any sum not exceeding 7,000*l.*, with interest at the rate of 4½ per cent. on the amount of the overdraft for the time being; and that the Council be authorised to charge such property of the Institute as they may think fit for the purpose of giving security for the said overdraft." (2) Ordinary general meeting: Mr. J. Alfred Gotch, F.S.A., on "Burlington—Devonshire Collection of Drawings." 8 p.m.

*Royal Sanitary Institute (Lectures for Sanitary Officers).*—Dr. E. J. Steegmann, M.B., on "Elementary Science: Physics, Chemistry"—IV. 7 p.m.

*University of London (Victoria and Albert Museum).*—Mr. Banister Fletcher on "German Gothic Architecture." 5 p.m.

*The Surveyors' Institution.*—(1) Mr. H. F. Bidder, B.A., Barrister-at-Law, and Mr. W. Vaux Graham, M.Inst.C.E. (Associate), on "Judicial and Parliamentary Decisions with Regard to Rights in Underground Water since 1907." (2) Adjourned discussion on Mr. W. R. Baldwin Wiseman's paper on "The Conservation of our National Water Resources." 8 p.m.

*Bristol Society of Architects.*—8 p.m.

*Junior Institution of Engineers (Royal United Service Institution, Whitehall).*—Paper on "The Design of a Modern Brewery and Plant," by Mr. Geoffrey Brooks. 7.30 p.m.

*Incorporated Clerks of Works' Association (Carpenters' Hall, London-wall).*—Paper by Mr. Gaston Depierres, Managing Director of the Indestructible Paint Company, President of the Paint and Varnish Society, on "Modern Progress with Manufacture and Application of Paint Materials." 8.15 p.m.

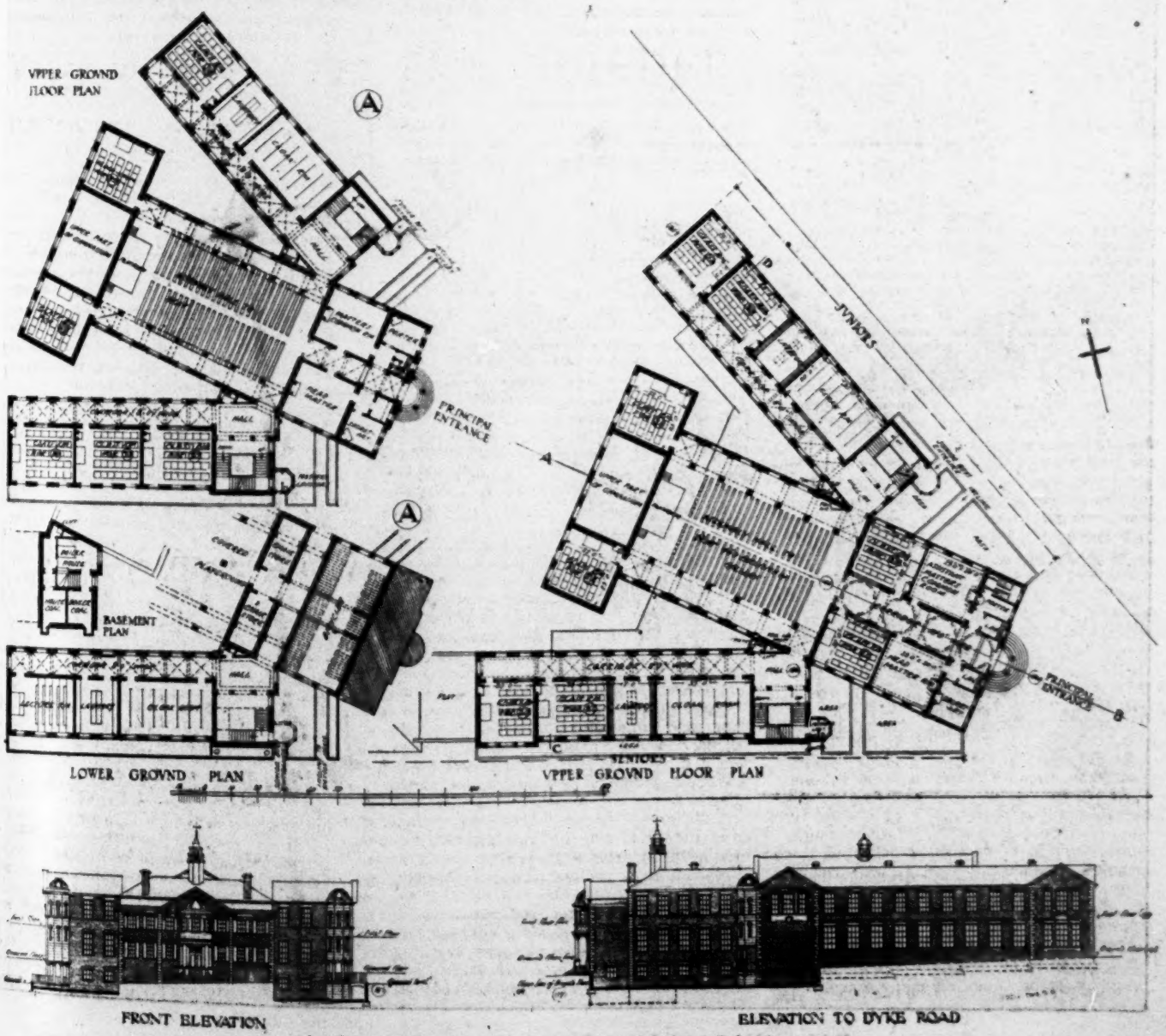
TUESDAY, MARCH 14.

*University of London (British Museum).*—Mr. Banister Fletcher on "Byzantine Architecture." Lantern illustrations. 4.30 p.m.

*Royal Sanitary Institute (Lectures for Sanitary Officers).*—Dr. E. J. Steegmann, M.B., on "Elementary Science: Physics, Chemistry"—V. 7 p.m.

*Institute of Sanitary Engineers (Students' Lecture).*—Mr. J. Lawrance on "Ventilation of Dwellings and Public Buildings." 7 p.m.

## BRIGHTON GRAMMAR SCHOOL




**Brighton, Hove, and Sussex Grammar School.**
Design by Mr. A. W. S. Cross, F.R.I.B.A.

*Nottingham Architectural Society.*—Exhibition of designs for Urban District Council Offices and criticism by Mr. F. W. Gregory.

*The Illuminating Engineering Society (Royal Society of Arts, John-street, Adelphi, London).*—Discussion on "School Lighting," previously opened by the papers of Dr. James Kerr (Medical Officer to the London County Council) and Dr. N. Bishop Harman, will be resumed. The chair will be taken by the President, Professor S. P. Thompson, D.Sc., F.R.S. 8 p.m.

*Institution of Civil Engineers.*—Mr. Philip Dawson on "The Electrification of a Portion of the Suburban System of the London, Brighton, and South Coast Railway." 8 p.m.

WEDNESDAY, MARCH 15.

*Carpenters' Hall, London-wall (Lectures on Arts Connected with Building).*—Mr. W. Bainbridge Reynolds on "Metal-work." 7.45 p.m.

*Royal Sanitary Institute (Lectures for Sanitary Officers).*—Dr. E. J. Steegmann, M.B., on "Elementary Science: Physics, Chemistry"—VI. 7 p.m.

*Institute of Sanitary Engineers.*—Sessional meeting. 8 p.m.

THURSDAY, MARCH 16.

*Society of Antiquaries.*—8.30 p.m.

*Institution of Mechanical Engineers.*—The President will deliver his address. 8 p.m.

*Carpenters' Hall, London-wall.*—Mr. M. C. Duchesne on "Woodland Industries." 8 p.m.

FRIDAY, MARCH 17.

*Royal Institution.*—Mr. J. H. Balfour-Browne, K.C., D.L., on "Water Supply." 9 p.m.

*Royal Sanitary Institute (Lectures for Sanitary Officers).*—Mr. W. C. Tyndale on "Calculations, Measurements, and Plans and Sections." 7 p.m.

*Leicester and Leicestershire Society of Architects.*—Mr. A. Herbert on "Influence of Classic Revival in Leicester." Lantern illustrations. 8 p.m.

*Royal Sanitary Institute.*—A sessional meeting in the Civil Court, Guildhall, Bristol, at 10.45 a.m., when a discussion will take place on "Modern Methods of Purification of Public Water Supplies." To be opened by Mr. J. A. MacPherson, B.Sc., M.Inst.C.E., Chief Engineer, Bristol Waterworks Company.

*Glasgow Technical College Architectural Craftsmen's Society.*—Discussion on "The Fixing of Tiles," opened by Mr. T. S. Allan. 8 p.m.

*Institution of Civil Engineers (Students' Meeting).*—Mr. Alwyne Meade on "The Production of Water-Gas." 8 p.m.

SATURDAY, MARCH 18.

*Architectural Association.*—Fourth Spring Visit to the offices of the General Accident, Fire and Life Assurance Co., Ltd., Aldwych, by permission of the architect, Mr. J. J. Burnet, LL.D. 2 p.m.

## ILLUSTRATIONS.

### Modern Churches.

THE illustrations of Pendlebury Church, Manchester; St. Agnes' Church, Kennington Park; Holbeck Church, Leeds; and St. Bartholomew's Church, Ipswich, are given in connexion with a paper by Mr. Charles Spooner, F.R.I.B.A., read before the Birmingham Architectural Association recently, an abstract of which appears on p. 293.

### Brighton, Hove, and Sussex Grammar School.

MR. BILSON was the assessor in this competition, and the conditions stated that competitors were to distinguish between the words "must" and "should." One of the requirements said that the principal approach *must* be from the south-east, which was interpreted to mean that the principal entrance must face that quarter, and this design was developed on that assumption.

The site has a fall of 30 ft. from north to south against the west boundary, but it is level along the axial line round which the school is grouped.

There is a fall of 20 ft. from north to south in the playgrounds, and to overcome this they are placed on two levels, with two floors of playsheds on the dividing line.

There is a fall of 12 ft. from north to south through the school, and advantage has been taken of this to provide three floors of class-rooms with due south light, the assembly hall being level with the central floor.

The Science and Art Departments are self-contained on the second floor of the centre block.

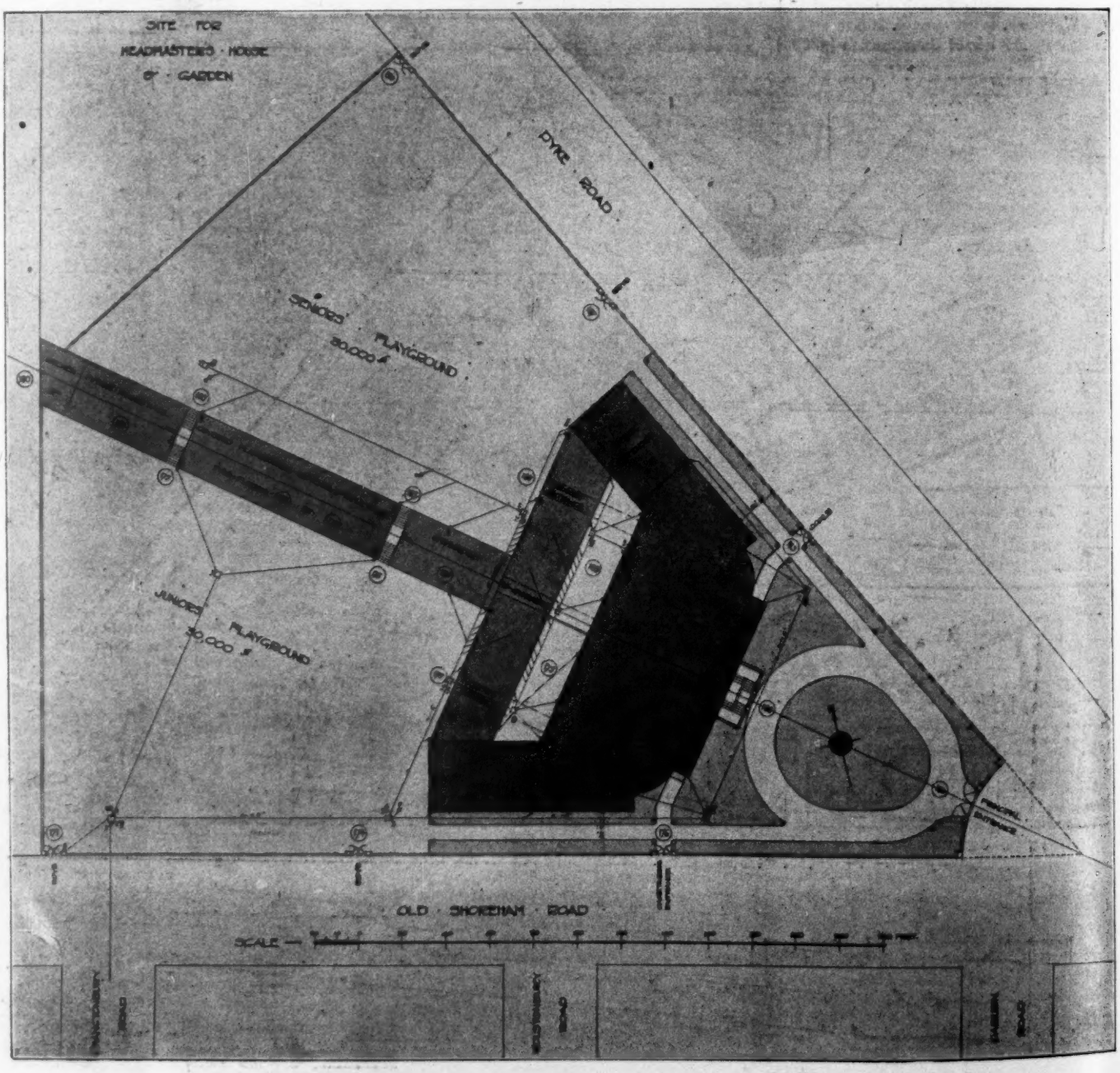
The limit of cost imposed prohibited any elaboration of the design, the exterior of which will be carried out in Sussex red bricks and tiles. S. B. RUSSELL.

[We also illustrate the design submitted in this competition by Mr. A. W. S. Cross.]

## BOOKS RECEIVED.

HANDRAILING. Part I.: How to Get the Face Moulds and Bevels for Wreaths. By Jno. Crewdson. (The Building Trades Correspondence School, 42, Penshurst-road, Thornton Heath. Price 6d.)

THE LAW RELATING TO THE PAVING AND SEWERING OF NEW STREETS AND PRIVATE STREETS. By Joshua Scholefield and Gerard R. Hill, M.A. Second Edition. (London: Butterworth & Co., 11 and 12, Bell-yard, Temple Bar.)




**Brighton, Hove, and Sussex Grammar School. Selected Design.**
Mr. S. B. Russell, F.R.I.B.A., Architect.

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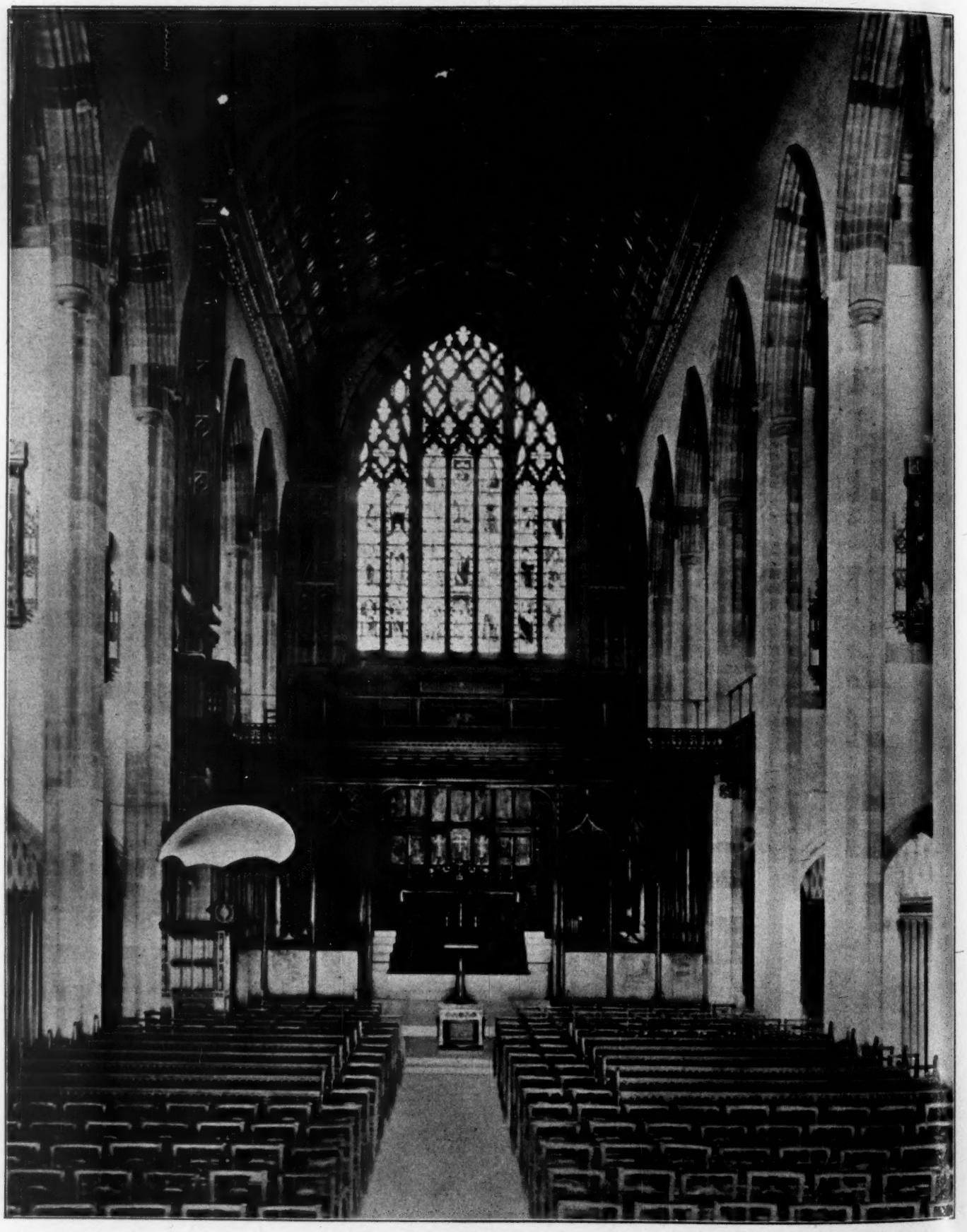

Photo by Cyril Ellis.

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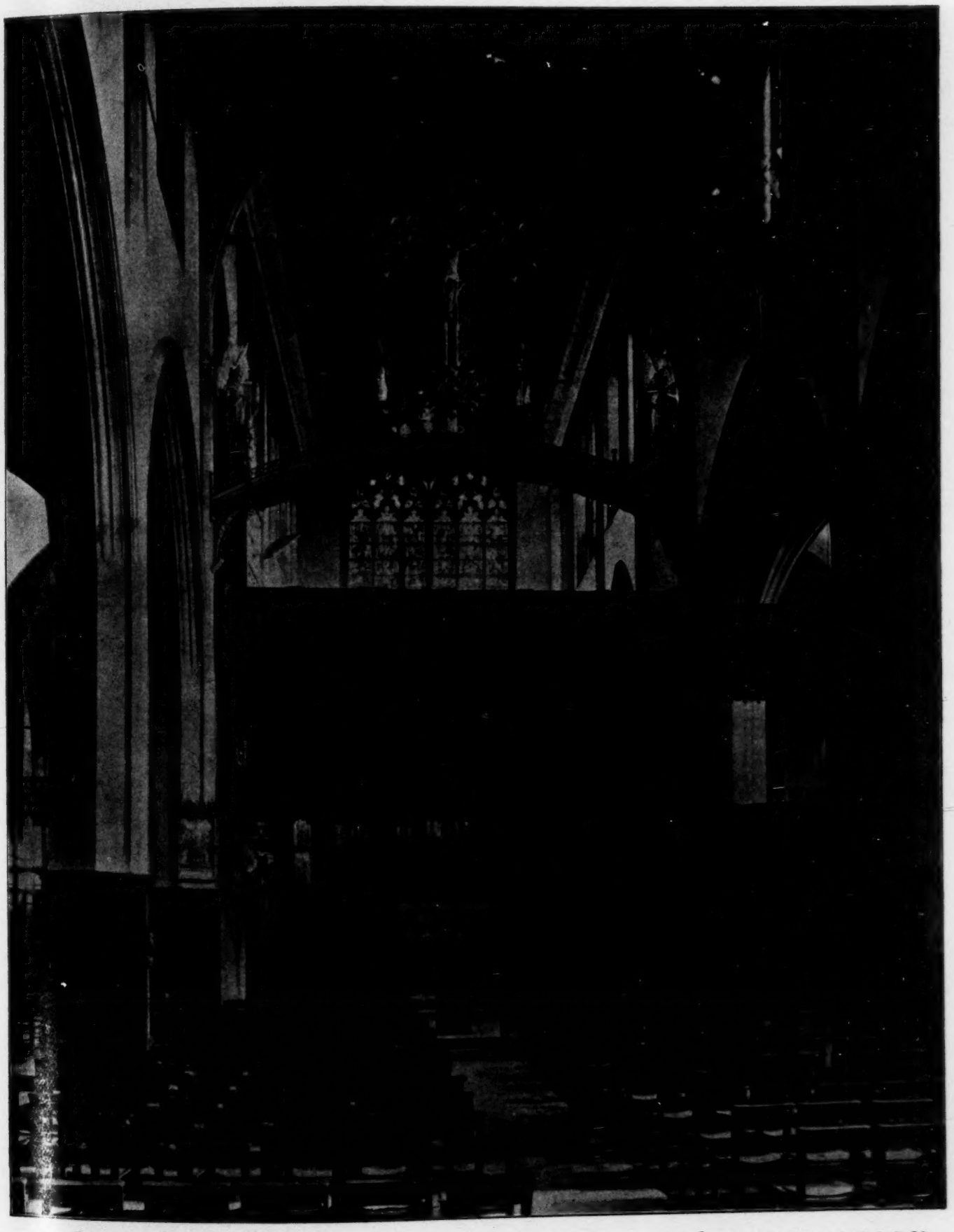
PENDLEBURY CHURCH, MANCHESTER.—The late G. F. Bodley, R.A., Architect.



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CHURCH OF S. AGNES, KENNINGTON PARK.—The late George Gilbert Scott, Architect.

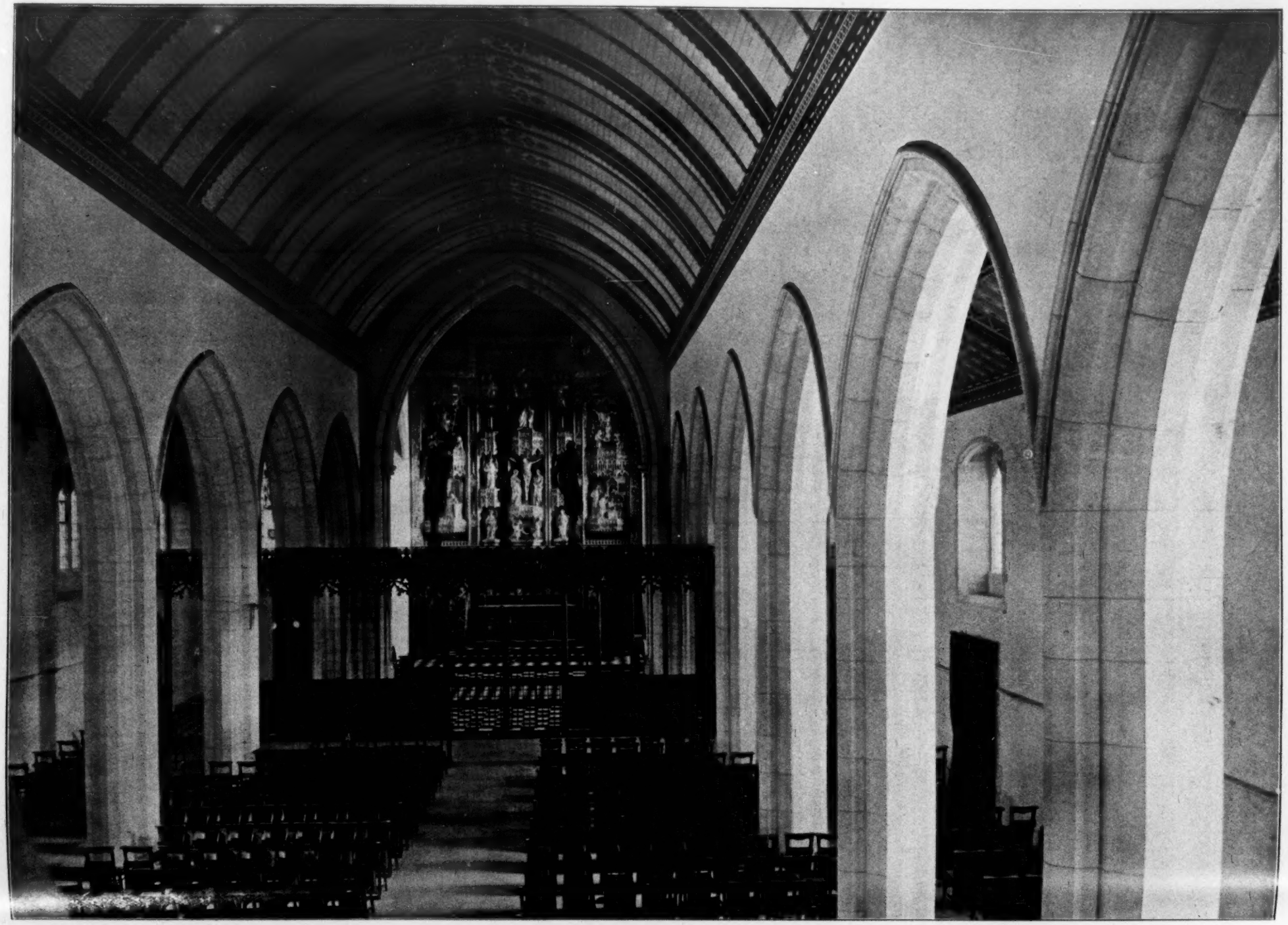

Photo by Cyril Ellis.

HOLBECK CHURCH, LEEDS.—The late G. F. Bodley, R.A., Architect.

Sprague & Co., Ltd., Printers, 4 & 5 East Harding St., E.C.

THE BUILDER, MARCH 10, 1911.

Photo by Cyril Ellis.

HOLBECK CHURCH, LEEDS.—The late G. F. Bodley, R.A., Architect.

Sprague & Co., Ltd., Printers, 4 & 5 East Harding St., E.C.

Photo by Cyril Ellis.

CHURCH OF S. BARTHOLOMEW, IPSWICH: LOOKING EAST.—Mr. Charles Spooner, F.R.I.B.A., Architect.

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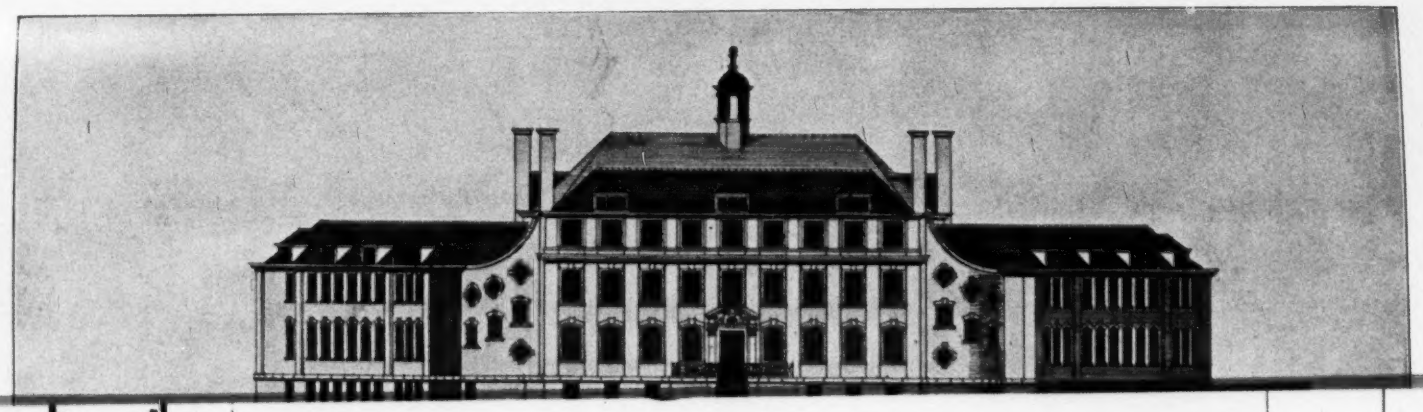

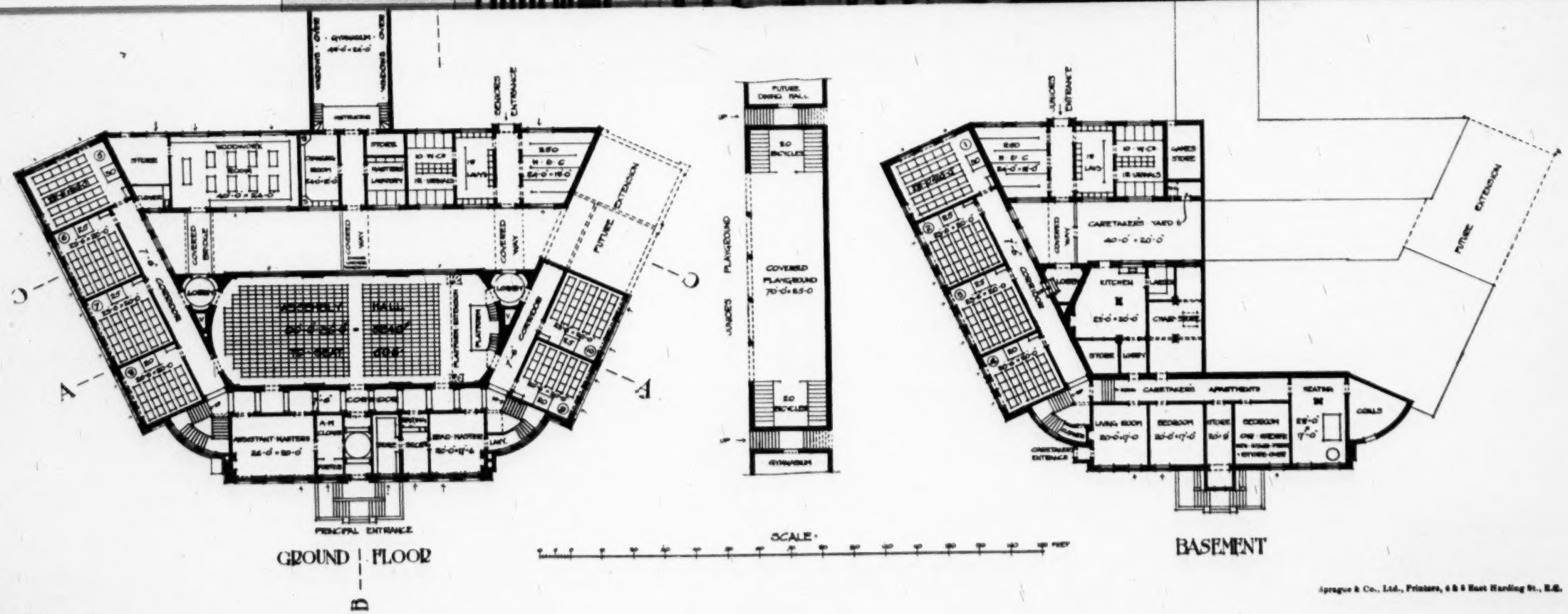


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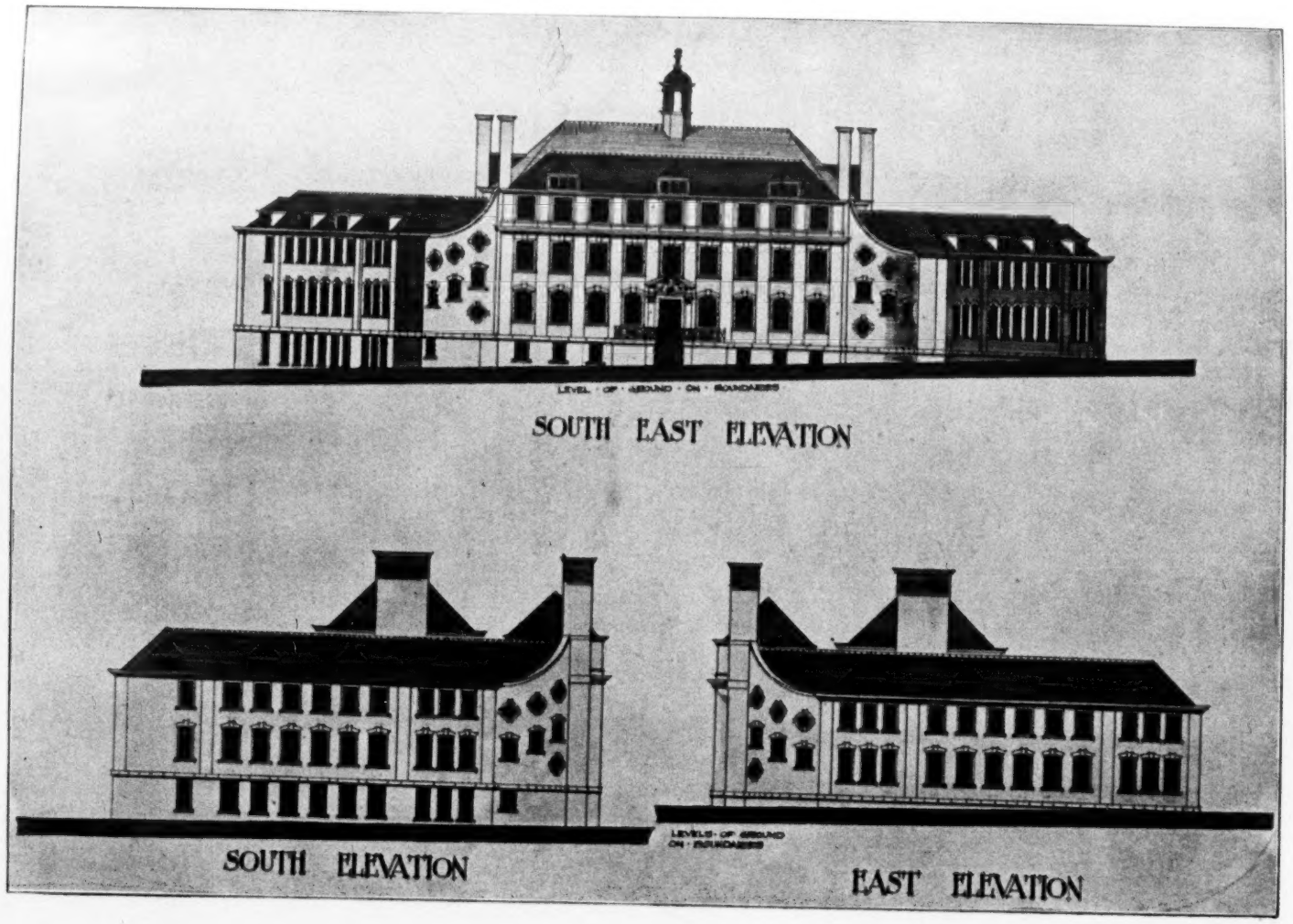
BRIGHTON, HOVE, AND SUSSEX GRAMMAR SCHOOL: SELECTED DESIGN.—Mr. S. B. Russell, F.R.I.B.A., Architect.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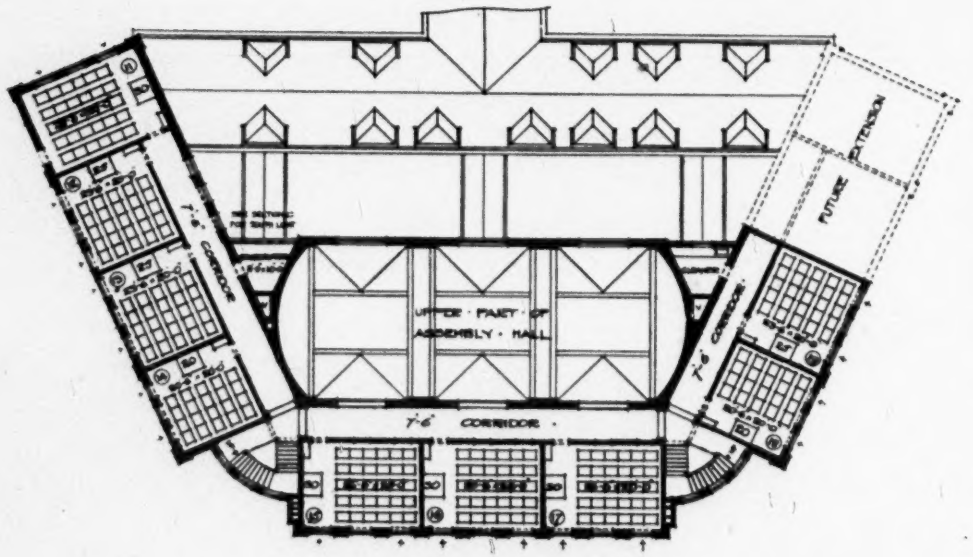


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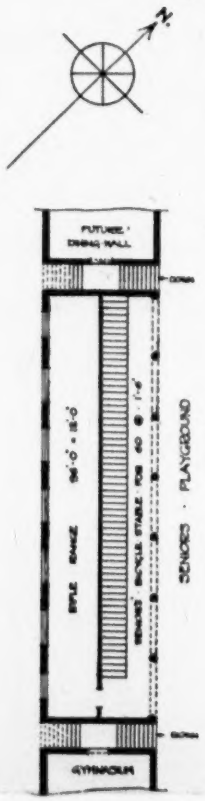


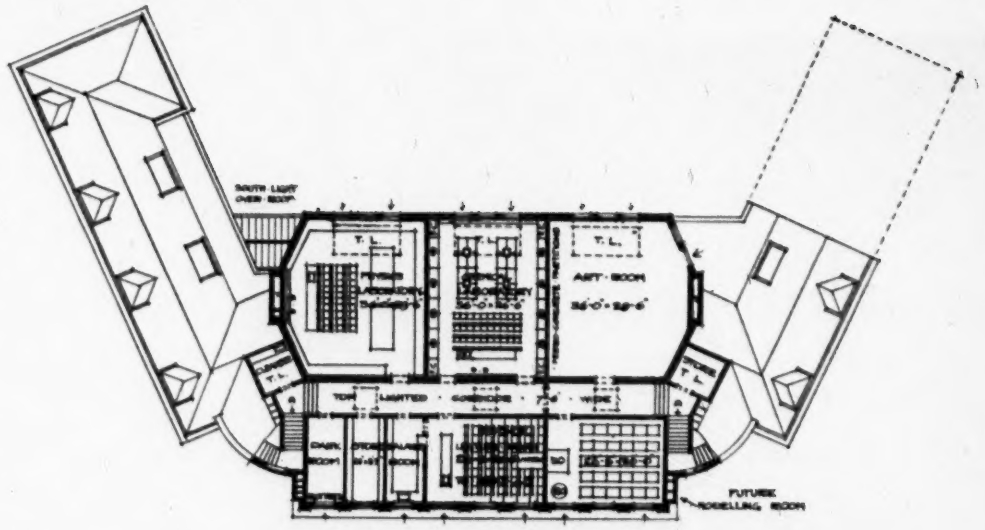


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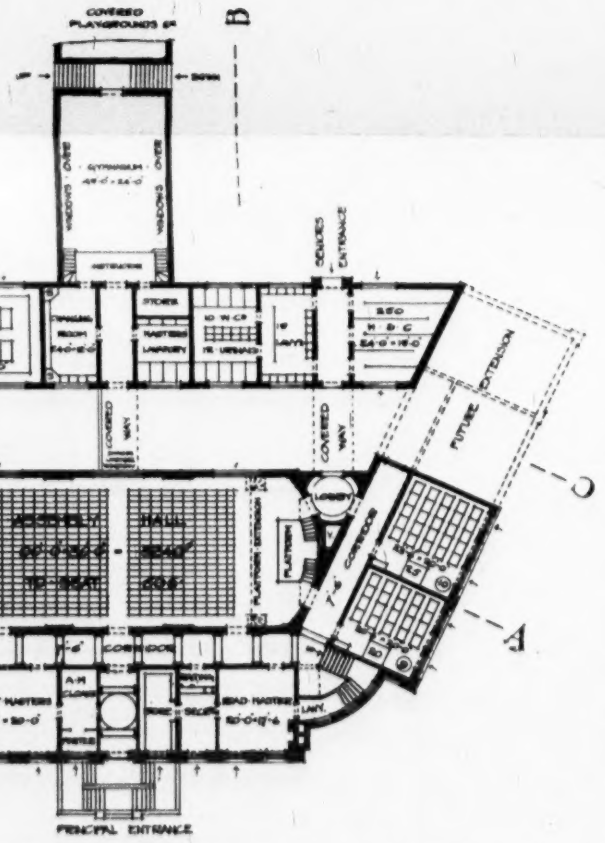


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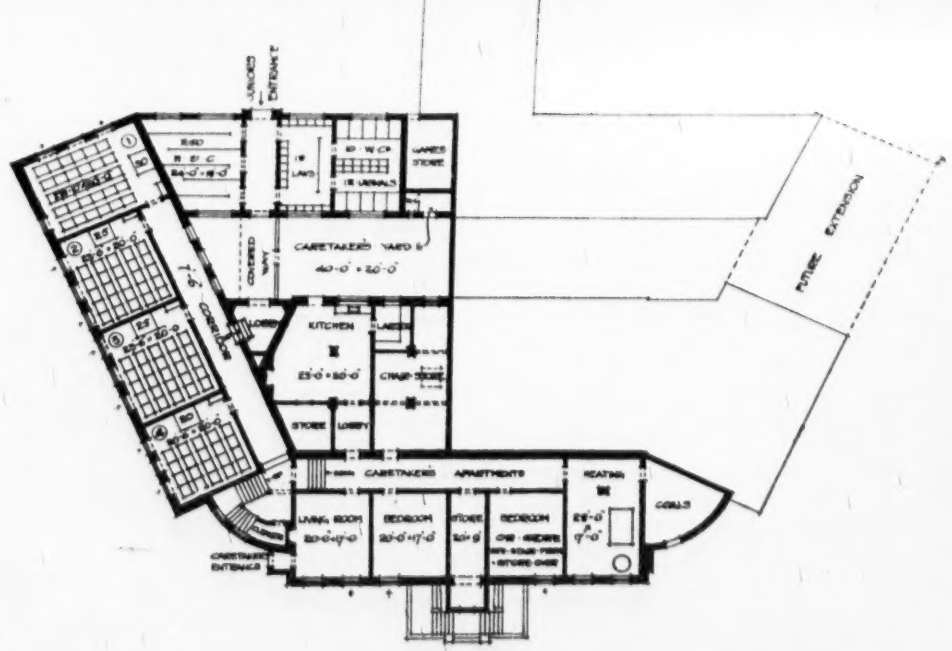


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BRIGHTON, HOVE, AND SUSSEX GRAMMAR SCHOOL: SELECTED DESIGN.—Mr. S. B. Russell, F.R.I.B.A., Architect.

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# MONTHLY REVIEW · *of* · CONSTRUCTION

## SOME DEFINITIONS USED IN STRUCTURAL MECHANICS.—II.

(*Continued from page 45, January 13.*)

By PERCY J. WALDRAM, F.S.I.

### RADIUS OF GYRATION AND ELLIPSE OF INERTIA.

IT was at one time customary to compare the relative stiffness of columns and stanchions of different sections by considering the relation existing between the least width of their cross-section (d) and their length (l), viz., the ratio $\frac{l}{d}$.

The dimension of least width, however, was no criterion of the disposition of material in the cross-section. It drew no distinction between the value of material advantageously placed at the outer edges of the cross-section, as in a hollow column, and that placed at or near the centre in a solid section. Instead of d, a lineal dimension can be used which is deduced from the moment of inertia, and which is, therefore, proportional not only to the external dimensions of the cross-section, but also to the disposition, advantageous or otherwise, of the material in it. This dimension is termed the Radius of Gyration (r), and is obtained by taking the square root of the moment of inertia of a section divided by its superficial area, or :—

$$r^2 = \frac{I}{A}$$

$$r = \sqrt{\frac{I}{A}}$$

It is not easy to form a clear mental picture of the dimension radius of gyration. It is borrowed from the science of gyrating, viz., rotating bodies. The energy stored up in the particles of a rotating fly-wheel is found to depend upon the size and weight of those particles multiplied by the square of their distance from the centre of rotation. The sum total of those stored-up energies forms the "inertia" of the wheel, *i.e.*, its resistance to the starting of rotation, and is termed its moment of inertia (I.). Such a fly-wheel can be imagined as flattened out into a broad but infinitely thin drum of the same area in cross-section, and possessing the same moment of inertia against rotation round the same centre. *The radius of such a hypothetical drum would be the radius of gyration of the fly-wheel.*

Similarly, two balls rotating on radial arms (Fig. 7A) possess stored-up energy equal to the energy which has to be applied to cause them to start rotating, and the amount of this stored-up energy is their moment of inertia (I.). They can be imagined as flattened out into thin plates (Fig. 7B), and the distance from the centre at which those plates must be fixed upon the radial arms in order to possess the same moment of inertia as the balls should be the radius of gyration (r) of the balls. Instead of two balls, one can imagine a short length, say 1 in. long, of the rim of a fly-wheel fixed on opposite radial arms. Their cross-section would then be similar to that of a girder, the radial arms forming the web as in Fig. 8. Such a *girder* would, of course, not rotate, but the moment of inertia of its cross-section would be similarly calculated, viz., the sum of the area of each thin layer multiplied by the square of its distance from the neutral axis.

The cross-section of the girder can, therefore, be similarly imagined as transformed into ideal conditions of efficiency with its whole area compressed into two infinitely thin layers or flanges, separated from each other by an infinitely thin web, and at such a distance (r) from the neutral axis midway between them *that the I of the ideal section is equal to the I of the section in its original form. That distance is termed its radius of gyration* (r).

The *strength* of such an ideal section as represented by the modulus $\frac{I}{y}$ would, of course, be greater than that of the section in its original form ; because the strength of the whole section is limited by that of the part most severely tried under bending, *i.e.*, the fibres which lie at the extreme distance (y) from the neutral axis. This distance (y) in all practical sections must be greater than r. The whole area of the hypothetical ideal section being at one distance (r) from the neutral axis, the I of the section, both in its ideal and its original form, can be found with one calculation only, viz. :—

$$I = Ar^2.$$

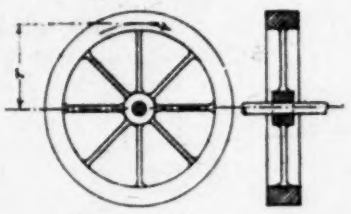


FIG. 7.

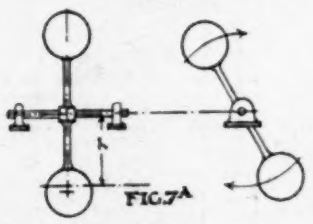


FIG. 7A

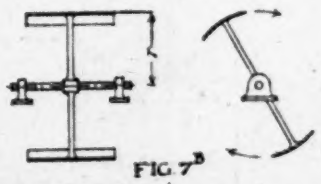


FIG. 7B

The strength modulus Z of such an *ideal* section would be equally simple :—

$$Z = \frac{I}{y} = \frac{Ar^2}{r} = Ar,$$

which is the same as the area (a) of one flange or $\frac{A}{2}$ × the full depth $2r = d$ or $Z = ad$. The approximate statement $Z = ad$ is, therefore, only true for ideal sections.

The more closely the radius of gyration (r) of a section approaches the dimension y of the distance of the extreme fibre from the neutral axis the more efficient and economical the section is.

In the uneconomical rectangular section with a large proportion of partially employed fibres near the neutral axis the dimensions r and y are $\frac{d}{\sqrt{12}}$ and $\frac{d}{2}$ respectively. In standard rolled joists they are approximately equal, and in plate and lattice girders, which more closely approach the lines of the ideal section, they are so nearly equal that they can without serious error be assumed to be identical and equal to half the effective depth between the centres of gravity of the two flanges.

*Ellipse of Inertia.*

It will be observed that if the radius of gyration and the area of a section be known and the distance y, its moment of inertia and its strength modulus Z can be ascertained from these particulars. Similarly, the radius of gyration can be obtained from the modulus Z. As there are an infinite number of directions in which a beam can be bent, there are an infinite number of strength moduli, and an infinite number of moments of inertia in its section, so also there must be an infinite number of corresponding radii of gyration. In all ordinary sections there is a greatest and a least radius of gyration corresponding to moments of inertia calculated along the directions of greatest and least strength. In the direction of greatest strength the area of each half of the section of the rolled joist in Fig. 9 may be imagined as compressed into an infinitely thin layer parallel to the flanges and to the horizontal neutral axis, and at a distance rx from it. In the direction of least strength this layer must be imagined as being in a position at right angles to its previous position, viz., parallel to the web

FIG. 8.

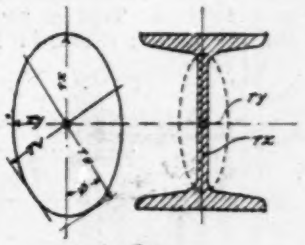


FIG. 9.

and to the vertical neutral axis and at a distance ry from it. Between these two extremes the imaginary infinitely thin layer can take up any number of positions at right angles to any number of different axes. Each position, however, would be tangential to the curve of an ellipse, of which 2rx and 2ry are the major and minor axes respectively. This greatly simplifies the calculation of the strength of any section in intermediate directions ; for if the greatest and least radii of gyration rx and ry be known, then the length of any other radius ru inclined at an angle $\phi$ to say rx is given by the equation :—

(1.) $ru^2 = rx^2 - \sin^2 \phi\ (rx^2 - ry^2)$,

and the corresponding radius rv at right angles to ru is given by the equation :—

(2.) $rv^2 = rx^2 - \cos^2 \phi\ (rx^2 - ry^2)$.

The addition of (1) and (2) gives

$$ru^2 + rv^2 = rx^2 + ry^2,$$

which, multiplied by the area of the section, gives

$$Ix + Iy = Iu + Iv$$

Therefore the sum of any two moments of inertia of a section about axes at right angles to each other is a constant quantity.

The radius of gyration corresponding to any

given section modulus (Z) and area of section can be ascertained thus:—

$$r^2 = \frac{I}{A} \quad Z = \frac{I}{y} \quad I = Zy$$

$$r^2 = \frac{Zy}{A}$$

$$r = \sqrt{\frac{Zy}{A}}$$

The greatest r of the 12 × 6 joist shown in Fig. 3 having an area of 12·946 sq. in. would be

$$\sqrt{\frac{52{\cdot}573 \times 6}{12{\cdot}946}} = 4{\cdot}936$$

This is approximately half the depth between the flanges.

The corresponding approximate least radius of gyration would be that of a rectangle 6 in. deep.

The I of any rectangle is $\frac{bd^3}{12}$ and its r is, therefore:—

$$\sqrt{\frac{bd^3}{12 \times bd}} = \sqrt{\frac{d^2}{12}} = \frac{d}{\sqrt{12}} \text{ or roughly } \frac{d}{3{\cdot}5}$$

In this case $\frac{d}{3{\cdot}5} = 1{\cdot}7$, whereas the exact least r of the standard joist is 1·311.

For British standard sections a very close approximation of the least radius of gyration is $\frac{1}{4{\cdot}75}$ of the least width; and of the greatest radius of gyration one-half of the depth between the flanges, *i.e.*, the full depth less the thickness of two flanges.

These approximations will be found extremely useful when the only particulars available are the dimensions, actual or assumed, of the cross-section of a joist.

Although it is seldom necessary in practice to calculate the I of a rolled section in order to arrive at the strength modulus Z, it is very frequently necessary in the design of steel roof trusses to know the radius of gyration of compression members, which may be composed of two or three rolled sections riveted togerher.

The labour of calculating the I of such members to arrive at the r by means of the equation $r = \sqrt{\frac{I}{A}}$ is greatly reduced by using British Standard sections, and referring to the published tables of the properties of such sections. Taking, for example, the built-up section shown in Fig. 10 for a

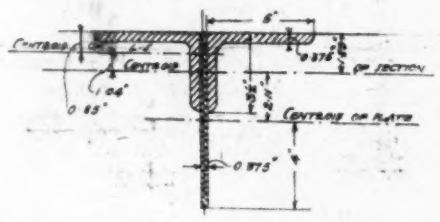



FIG. 10.

principal rafter and composed of two 5-in. × 3½-in. × ⅜-in. standard angles, and an 8-in. × ⅜-in. plate, the necessary calculations to arrive at the vital ratio $\frac{l}{r}$ are (neglecting rivet holes) as follows:—

*Calculation of R in a Vertical Direction.*

Area of each L S = 3·05
" " plate = 3·00

Distance of centroid of compound section from top edge $= \frac{(3{\cdot}00 \times 4) + (6{\cdot}1 \times {\cdot}85)}{9{\cdot}1}$

$= \frac{12 + 5{\cdot}185}{9{\cdot}1}$

$= 1{\cdot}89$

*Moment of Inertia of Entire Section.*

| | | |
|---|---|---|
| c | I of angles from tables | 3·09 |
| | I of web $\frac{{\cdot}375 \times 8^3}{12}$ | 3·09 |
| | | 16·00 |
| d | $3{\cdot}05 \times 2 \times 1{\cdot}04^2$ | 6·60 |
| | $3{\cdot}00 \times 2{\cdot}11^2$ | 12·75 |
| | | I = 41·53 |

*Radius of Gyration of Whole Section.*

$r^2 = \frac{I}{a} = \frac{41{\cdot}53}{9{\cdot}1} = 4{\cdot}62$

$r = \sqrt{4{\cdot}62}$

$= 2{\cdot}15$

## ENGINEERING FEATURES OF THE ROYAL AUTOMOBILE CLUB BUILDING.

A JOINT meeting of the Junior Institution of Engineers and the Architectural Association was held at the Royal United Service Institution, Whitehall, on the 17th ult., when Mr. S. Bylander read a paper on "The Architectural and Engineering Features of the Royal Automobile Club Building." In the course of his remarks, he said:—

### Engineering Features.

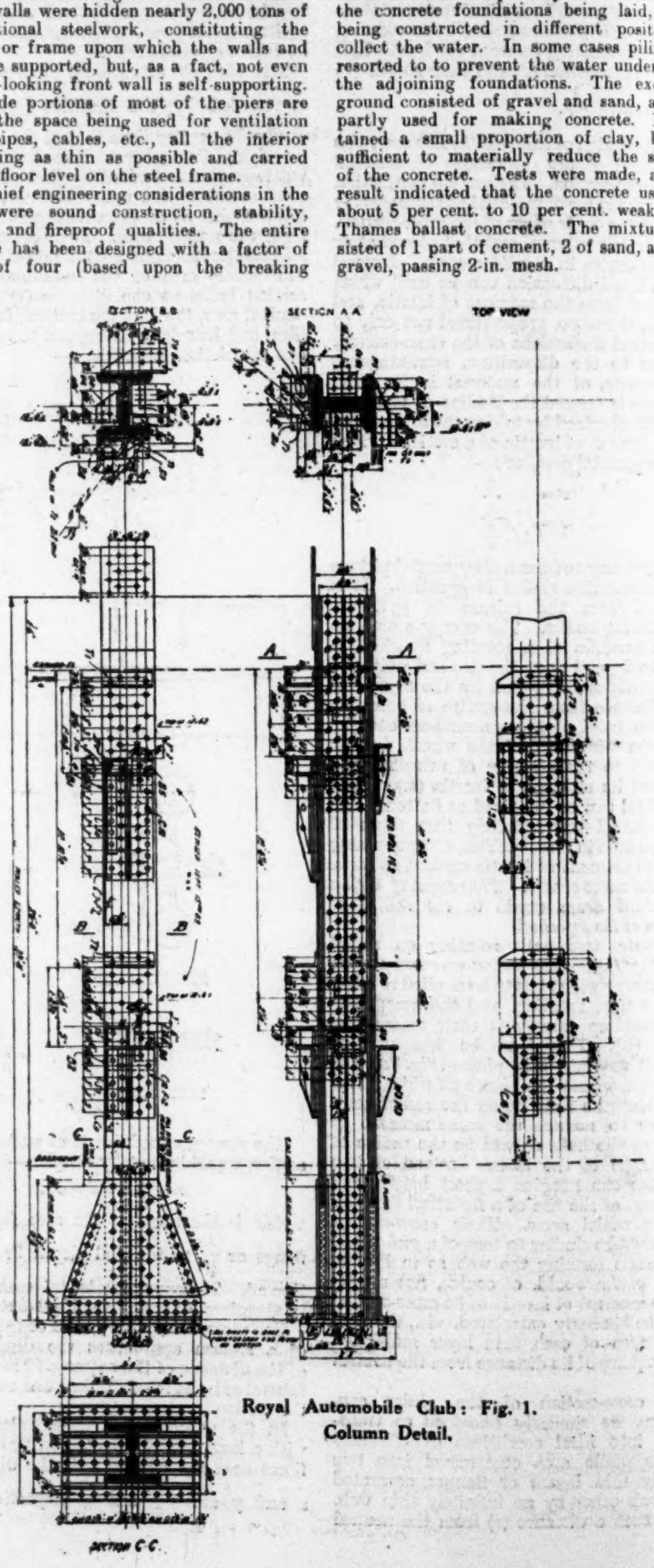
It would hardly occur to the casual observer of the finished building that within its monumental walls were hidden nearly 2,000 tons of constructional steelwork, constituting the skeleton or frame upon which the walls and floors are supported, but, as a fact, not even the solid-looking front wall is self-supporting. The inside portions of most of the piers are hollow, the space being used for ventilation ducts, pipes, cables, etc., all the interior walls being as thin as possible and carried at every floor level on the steel frame.

The chief engineering considerations in the design were sound construction, stability, rigidity, and fireproof qualities. The entire structure has been designed with a factor of safety of four (based upon the breaking strength of steel), now a standard in good engineering practice.

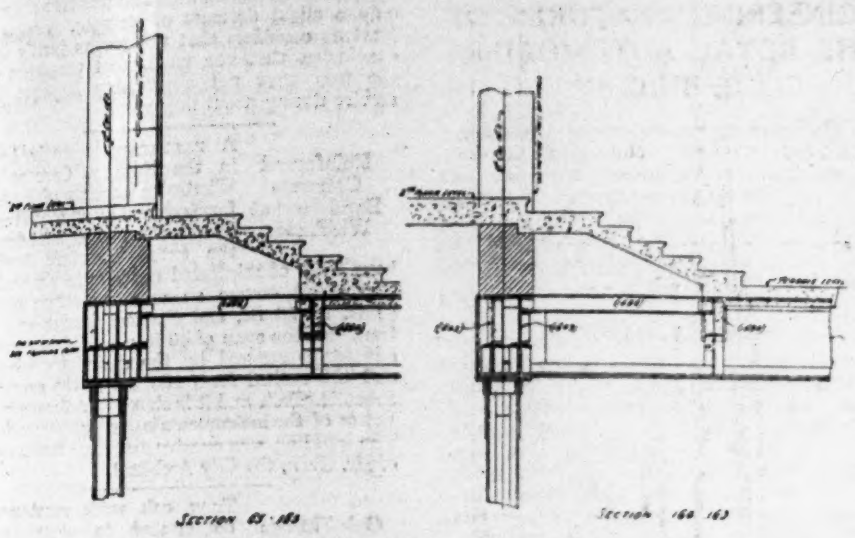
### Foundations.

The foundation work was rendered difficult on account of the depth required (about 37 ft. below street level), the permanent water level being higher than the lowest part of the structure.

An asphalt damp course ½ in. thick is laid below and around the foundations, and under the 12-in thick basement concrete floor. In fact, the two stories below ground floor are constructed as a watertight tank, the surrounding walls being asphalted on the outer side. It was found during construction that the permanent water level was about 32 ft. below street level, and that by pumping the water could be temporarily lowered to permit the concrete foundations being laid, sumps being constructed in different positions to collect the water. In some cases piling was resorted to to prevent the water undermining the adjoining foundations. The excavated ground consisted of gravel and sand, and was partly used for making concrete. It contained a small proportion of clay, but not sufficient to materially reduce the strength of the concrete. Tests were made, and the result indicated that the concrete used was about 5 per cent. to 10 per cent. weaker than Thames ballast concrete. The mixture consisted of 1 part of cement, 2 of sand, and 4 of gravel, passing 2-in. mesh.




Royal Automobile Club: Fig. 1. Column Detail.



Royal Automobile Club: Figs. 2 & 3.

Each tier of columns is, as a rule, supported on isolated foundations placed at different levels to suit drains, ducts, lift pits, baths, and surrounding work, the size in all cases being proportionate to the total dead load and part of the live load, a load of 5,000 lb. per square foot being allowed on the ground. The average load on each column was about 300 tons, and the average size of column foundation 11 ft. by 11 ft. The columns were carried on two-layer steel beam grillages embedded in 1-2-4 gravel concrete. The centre line of the column above was marked on the top layer grillage, and the grillage set to exact position by means of a theodolite. This method ensured the columns being placed in correct position. The thickness of concrete below the beams was 18 in. above the asphalt course, and 6 in. below same.

### Walls.

All the walls, with the exception of the east and west external walls, are supported on steel girders and steel columns. The internal partition walls and piers are built in 2½-in. to 4-in. thick pumice concrete blocks or hollow brick tiles, supported at each floor level on steel beams or girders. In some cases the partition walls or piers for the decorative work are supported on the reinforced concrete floor.

### Columns.

The steel columns are generally built up of angles and plates, the web plate being 12 in. wide and the flange plates 14 in. (see Fig. 1). In some cases the section had to be of a smaller size to suit the diameter of the finished architectural column. The steel riveted bases form part of the columns, and are about 3 ft. by 2 ft. on plan. They are built up of large gusset plates, angles, and ¾ in. thick base plate, and are bolted to the steel grillage girders. The caps are of similar construction to the bases (see Figs. 2 and 3).

The columns are made in two-story lengths, and are spliced about 2ft. 6 in. above the floor level, the upper tier being connected to the lower one by means of two 14-in. by ½-in. splice plates. A milled butt joint is relied upon for transmitting the load, great care being taken in machining it. The beams are supported on angle brackets riveted to the sides of the columns.

### Girders, etc.

The heavy girders at the second floor were built up of plates and angles, having one, two, or three webs according to load span and depth allowable, which was limited by the requirements of the decorations (see Figs. 4 and 5).

The columns were placed generally 12 ft. apart, the main girder between the columns acting as floor beams, the span of the floor construction being about 12 ft.

The floors are constructed in concrete flat slab, about 6 in. thick, reinforced by indented steel bars.

All the steelwork is cased with concrete at least 2 in. thick, properly secured by steel wire reinforcement. The concrete used for the floor construction consisted of 1 part cement, 2 of sand, 2 of broken brick, and 2 of clinker.

### Staircases.

The staircases are constructed in concrete and carried on steel beams and strings, with the exception of two staircases made in reinforced concrete.

### Roofs.

The roofs are constructed in reinforced concrete supported on steel beams and struts. The flat roof is covered with a layer of asphalt ¾ in. thick.

### Loads.

The lower floors and public rooms were calculated for a total load of 220 lb. per square foot, and the upper or bedroom floors for 160 lb. per square foot. The weight of stonework was assumed to be 150 lb., brickwork 120 lb., brick and clinker concrete 120 lb., and stone concrete 150 lb. per cubic foot. Allowances were made for special loads to be carried, such as fans, lift machinery, water tanks, heavy decorative work, and concrete filling for making slopes on flat roofs.

### Stresses.

The steel was made to a carefully drawn-up specification, and inspected at the place of manufacture. The ultimate tensile strength of the steel was from 28 to 32 tons per square inch of original cross section of piece tested, and minimum elongation of 22 per cent. in 8 in. The percentage of sulphur and phosphor was limited, and bending tests specified. The working stresses were:—Beams: Tension and compression, 16,000 lb. per square inch. Built up girders: Tension and compression, 15,000 lb. Shear: 10,000 lb. Bearing for rivets: 20,000 lb. Steel columns: Maximum direct stress, 12,000 lb. per square inch. The sum of direct stress and bending stress due to eccentric loading was not to exceed the safe stress for columns. The formula used for safe stress on columns is similar to that contained in the London County Council General Powers Bill.

### Retaining Walls.

The front retaining wall is constructed in mass concrete. The reinforced concrete retaining wall at back is 38 ft. high, the thickness at base 3 ft. 9 in., and at ground floor level 14 in. At a level of 28 ft. below the ground floor the thickness is 2 ft. 9 in. The width of the toe varies from 15 ft. to 22 ft., and the thickness from 3 ft. to 18 in. The toe of the retaining wall in some cases supports columns, and is calculated accordingly. As will be seen from Fig. 6, the author has shown the bars bent to a large radius, and continued where possible through the vertical part into the toe, assuring that the moment of resistance is greater and not less at the junction of the wall and toe than that of the wall. He is of opinion that splicing and hooking at this point can seldom be made satisfactorily.

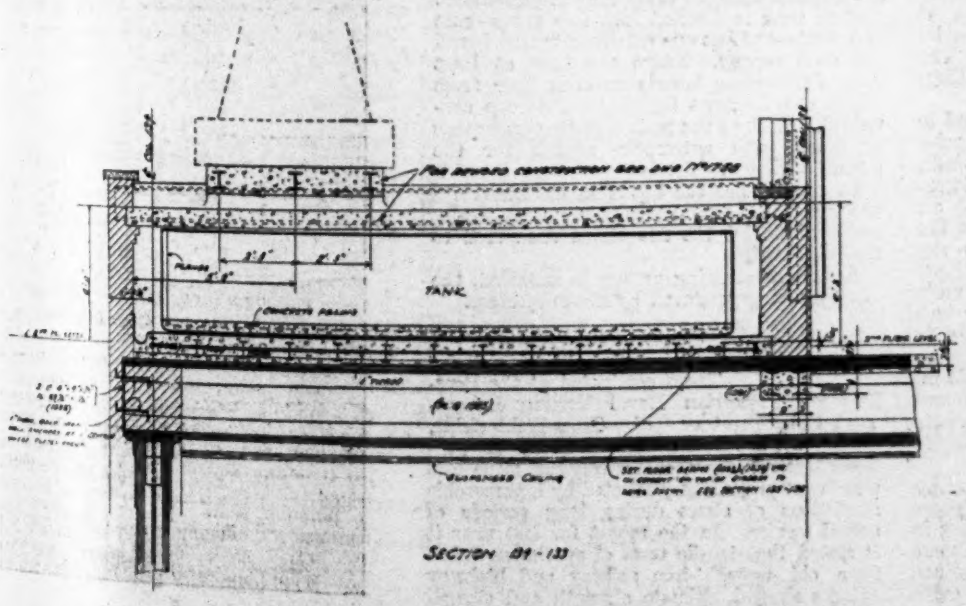
The concrete was composed of 1 part of cement, 2 parts of sand, and 3 of crushed gravel from site passing ¾-in. mesh. Crushing tests of 6-in. concrete cubes were made, and it was ascertained that the sand and gravel were satisfactory. The work was carried out slowly and very carefully, and struts were not removed until six weeks after the laying of the concrete.

### Drainage.

As the basement floor is at a lower level than the sewers, two systems of drainage were adopted, viz.:—

(1) A system of pipes suspended below the basement ceiling collecting all drainage above this level, and discharging by gravitation to the sewers in the ordinary way.

(2) A system of pipes below the basement floor leading to the ejector chamber, the floor




Royal Automobile Club: Fig 4.

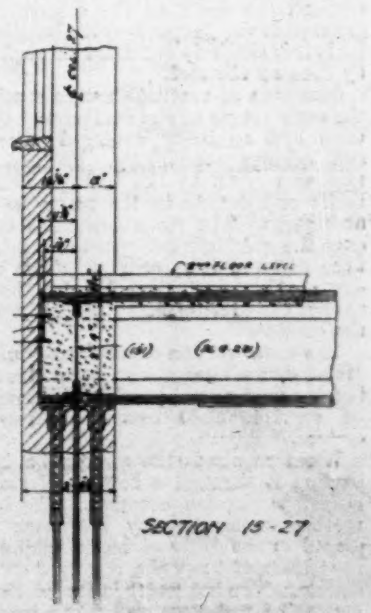
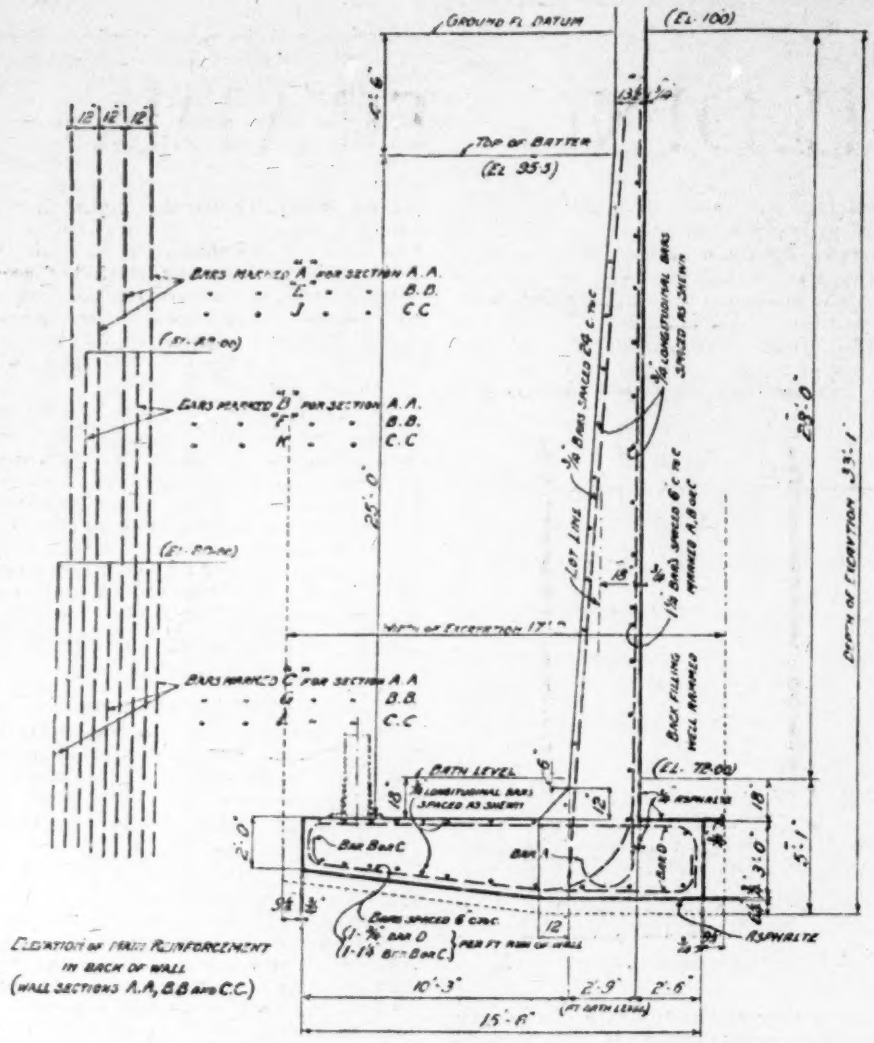



Fig. 5.




**Royal Automobile Club: Fig. 6. Section of Back Retaining Wall.**

of which is 46 ft. below the street level. This low-level sewage is raised by compressed-air ejectors, and discharged into the sewers at the lower ground floor level. Compressed air is supplied by electrically-driven air compressors in the basement, automatically controlled. A variation of pressure in the air cylinder of 8 lb. is allowed between the points of starting and stopping.

### Heating.

The building is ventilated on the "Ballance" system, which permits of the air being regulated in any room independently of other rooms. The setting out and construction of the ducts was a complicated and costly matter. Separate fans are used for the fresh air and foul air. As previously mentioned, the fresh air is taken in from the back area and carried in a duct 15 ft. 5 in. under the basement floor to the filter chamber, thence to the fan chamber, the fans forcing it through the ducts to the different air-inlet gratings in various parts of the building. The foul air is similarly extracted through gratings by fans on the roof.

Questions of ventilation were considered in the early stages of the design, and the architects and engineers arranged piers, walls, and ceilings accordingly. Particular attention was given to the best position of air inlets and outlets in the rooms to suit the decoration. The main horizontal ducts run over the corridors between the constructional floor and the false ceiling. From the main ducts other ducts are led to the various rooms, the grating being generally placed in the cornice.

The ducts vary in depth from 6 in. to 24 in. Metal ducts were used where it was found inconvenient or not practical to employ ducts of concrete slabs resting on steel angles or tees.

When required, the air can be heated by passing it through a battery of steam pipes placed in the fan chamber. The heating is further augmented by hot-water radiators placed in the different rooms behind gratings in recesses of the walls, arranged on the cable system. The hot water is forced through the system of radiators and pipes by means of pumps. In two cases hot-water pipes are laid in the wall coverings, for heating the corridors and rooms.

### Lighting and Power.

Two separate and independent sets of current supplies have been arranged, on the three-wire direct-current system, with a tension of 220 volts between the outer wires or cables. Each supply, which is installed for 1,000 amperes for lighting and 1,000 amperes for power, is connected to its separate distribution board or switch-boards placed in separate rooms and enclosed with fireproof walls. Each distribution board has two panels, one for lighting and one for power. The installation is arranged in duplicate throughout, and every room or different part of the building has lamps connected to both supplies. There are also two supplies of 500 amperes each for temporary illuminations.

Each floor is divided into two parts—east and west—and has one sub-distribution board for each supply. There are thus at least four distribution boards on each floor from which the different lighting points are controlled. Each of the main distribution boards is fitted with automatic switch for the separate pilot supply.

In case of fire the lights in the staircases and fire-escape passages will be automatically switched on by the fire alarm connected to the pilot switch.

A vacuum cleaning system is installed, the vacuum being produced by steam ejectors.

## CONSTRUCTION NOTES.

**Strength of Iron after Long Use.**

TESTS conducted at the Prussian Royal Testing Laboratory of Gross-Lichterfelde, under the direction of Professor Martens, show conclusively that structural iron is not prejudicially affected by innumerable repetitions of stress during long periods of actual service. In the report for last year it is stated that tensile tests of specimens taken from old wrought-iron railway and highway bridges showed ultimate strength and elongation almost exactly equal to those for specimens which had been under different stress, while comparative tests on annealed test bars showed only a slight decrease of strength. Professor Martens considers that the results justify the conclusion that the mechanical properties of the iron were not appreciably impaired by service during about fifty years.

**Reinforced Concrete Bandstand at Wiesbaden.**

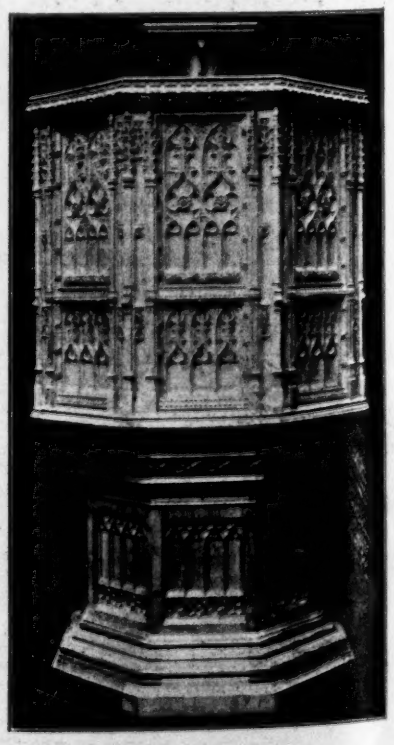
A BANDSTAND recently built in the Kurhaus Gardens at Wiesbaden consists of a platform covered by an arched roof in the form of a semi-dome, the entire structure having been built of reinforced concrete in six weeks. The stand covers an area measuring about 47 ft. by 38 ft., and the semicircular arch in front has the span of 40 ft. clear. One notable advantage secured by the material employed and the arched form adopted is the excellent acoustic effect, and it is stated that the carrying power of the instruments is particularly marked. The building was constructed from the designs of Mr. Grün, the City Architect.

**Oak Fittings and Hot-Water Pipes.**

THAT oak work must never be erected in close proximity to hot-water pipes is practically illustrated by experiences in relation to a pulpit, constructed in that material, erected about two years ago in the church dedicated to S. John the Baptist at Newport, Mon. It was designed by Mr. Frank R. Kempson, F.R.I.B.A., and made by Messrs. Harry Hems & Sons, of Exeter. The structure was butt-jointed throughout, and when placed in position appeared to be, from every point of view, a most satisfactory addition to the fabric. But for some little time past great surprise has been created by water oozing out of the base, with the result that several joints opened. The reason for this has now been discovered, and is thus explained by the Rev. J. Frank Summers, who, in his parish magazine, writes:—

"We have been caused much anxiety of late by the pulpit. Dark-coloured water has been pouring out of it, and the joints of the lower portion have shrunk considerably. Messrs. Hems' workmen have examined it, and have discovered the cause of the mischief. The base of the pulpit is, of course, hollow, and hence was air-tight. Unfortunately the hot-water pipes pass right underneath, and steam has risen into the hollow, and, having no way of escape, has become condensed into water and has simply saturated the woodwork. We hope that by boring holes in the floor of the pulpit and making a passage for air underneath it the mischief may be overcome. The hot-water pipes must also be cased with asbestos or some other non-conducting substance."

The explanation as to why steam should escape is not quite clear, but if the reverend gentleman is content to be steamed, instead of his pulpit, we, of course, have nothing to add.



**Pulpit, St. John's, Newport.**

# THE BUILDING TRADE.

## SCAFFOLDS FOR STEEL-FRAME BUILDINGS.

BY the introduction of steel-frame buildings construction methods have necessarily been modified. The handling and erection of heavy columns, girders, and other members involves the employment of powerful cranes, usually of the derrick type, supported either on construction towers or staging, or on the upper part of the steelwork and raised as the building grows in height. When the columns have been erected and the beams temporarily fixed to a given floor level it is easy to make working platforms by laying planks over the beams, but men engaged in riveting have to be slung on suspended scaffolds, as they cannot rivet up beams underneath when standing on the floor.

Both in this country and in America it is not found practicable to complete the permanent floors of a steel-frame building nearer than three floors from the top of the steelwork for the time being. Thus while the fourth floor steel frame is being erected the first floor should be completed, with the exception of such holes as must be left for hoisting steel members inside the building. The permanent floors naturally facilitate building operations in connexion with the enclosing walls, but do not obviate the use of scaffolding.

Cases frequently arise where it is found desirable to work entirely from the outside. Then, as at the Savoy Hotel extension, pole scaffolding is erected in the ordinary way, and may be constructed suitably for progressive building from the bottom, or so as to provide for the simultaneous building of curtain walls from all floor levels.

On other contracts, such as that for the *Morning Post* building, most of the work is done from the inside, and the remainder by the aid of cantilever scaffolds braced from the interior of the building.

Cantilever scaffolds are sometimes used as the foundation for ordinary pole scaffolds, and in such cases require to be securely supported, not only from the inside of the building, but also by the addition of struts between the free end of the cantilevers and some convenient ledge on the front of the wall beneath.

For steel-frame buildings the general plan is to use one or more series of cantilevers and platforms for constructing the curtain walls of one or more stories, and to employ secondary platforms supported on trestles to enable the men to reach the upper part of each story. Assuming the cantilever platform to be rigid and stout enough to be free from excessive deflection beneath the trestles, a trestle scaffold may be quite safe, but we fear that this condition is not always secured in practice.

The latest development in connexion with steel-frame buildings is to substitute for the ordinary cantilever platforms a

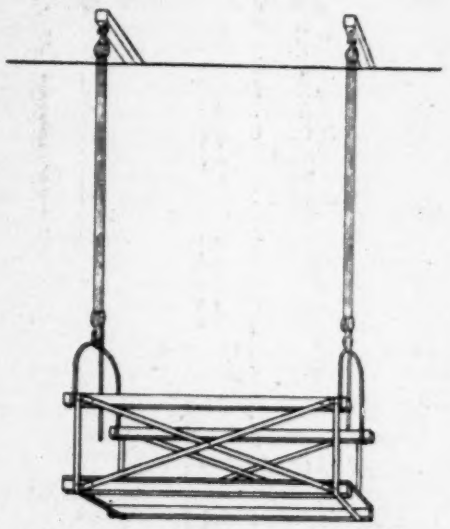


**Fig. 1. Stephens & Carter's Cradle.**

series of suspended scaffolds or cradles, each providing accommodation for two men. As an example, we may cite the Whitehall Building extension works in Battery Park, New York.

The original structure, erected in 1902, comprised twenty stories of the steel-cage type, and by the addition of a thirty-two story block has been enlarged so that it now covers an area three times that of the portion first built. The steelwork erecters were followed about two stories below by ten riveting gangs of four men each, working on suspended scaffolds in the way mentioned above, and below them followed a gang of sixty floor constructors, who laid hollow tile and concrete floors of nearly 15,000 sq. ft. area in nine hours each. The brick and terra-cotta enclosing walls were commenced at the eighth story on June 13 last, and completed at the average rate of one story a day by 160 men working from suspended steel scaffolds, each of these being 10 ft. long and providing a platform 4 ft. wide. The scaffolds were slung by steel cables about 100 ft. long, the upper end secured to steel cantilevers formed of 8-in. channel-bars bolted at the fixed end to the floor beams of the steel skeleton, while the lower end of the cables was wound on small winches attached to the scaffolds. Thus the bricklayers' labourers were able to raise the platform from time to time as work advanced so as to keep the bricklayers well up to the top of the wall.

The cantilever supports were fixed several stories above the scaffolds, and a dozen men were engaged in moving the scaffolds along the face of the building. This operation was performed by the aid of spare cantilevers fixed in advance of those in use and to which the scaffolds were transferred by attaching new cables and then disconnecting the others. The procedure here briefly outlined enabled the bricklayers to work their way right round the building without appreciable delay at each change of position.

So far as we are aware this system of scaffolding has not been adopted in the United Kingdom for erecting buildings, although quite familiar in painting and cleaning existing structures, and there is no reason whatever why the cradles now on the market should not be employed in actual building construction.

One form of cradle very suitable for use as a suspended scaffold is that made by Messrs. Stephens & Carter, of Paddington. The cradle is strongly made with timber bearers, a stout floor and braced sides affording ample security, and the appliance when slung from cantilever supports can be raised by the men themselves to suit the increasing height of the work. As the cradles are already supplied up to 24 ft. long it is evident that comfortable room can be provided on each for a gang of at least four bricklayers and four labourers. The necessary arrangements for shifting the cradles longitudinally with the progress of work would be a simple matter. Fig. 1 illustrates this cradle suspended in a manner suitable for building the enclosing walls of a steel-frame building.

Another cradle of a similar character is that made by the Palmer Travelling Cradle and Scaffold Company, of Westminster Bridge-road.

As generally made the cradle is 6 ft. 6 in. long, and, although of ample strength and providing fully for the safety of workmen using it, weighs only about ¾ cwt. If constructed of greater length for use in the erection of buildings the additional strength required would involve a considerable increase of weight, and the provision of mechanical safeguards in connexion with

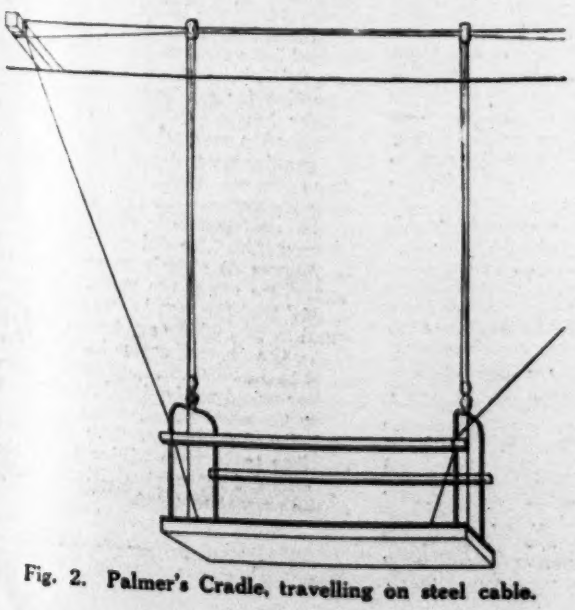


**Fig. 2. Palmer's Cradle, travelling on steel cable.**

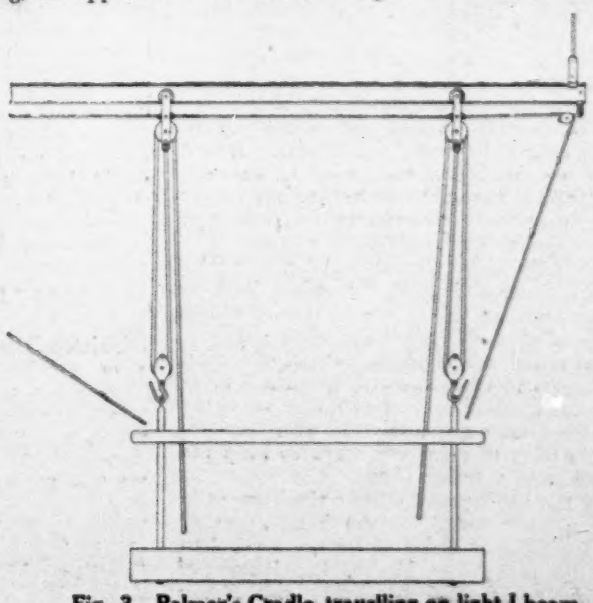


**Fig. 3. Palmer's Cradle, travelling on light I beam.**

the means of raising and lowering the cradle would have to be taken into consideration.

The Palmer cradle is sometimes hung from fixed cantilevers, but more generally is suspended so as to travel along a steel wire cable, capable of supporting a load of 8 tons, stretched between two cantilevers, as represented in Fig. 2. Or it may be fitted so as to be travelled along a light rolled steel joist, as illustrated in Fig. 3. Any one of these three methods would be quite suitable for the needs of steel-frame building construction.

A type of cradle which was shown last year at the Business Exhibition, Olympia, possesses some novel features, consisting mainly in the provision of apparatus for raising and lowering the cradle. This cradle is the invention of Mr. Thomas Moore, a builder whose works are in Ebury-square, W.

As may be seen by the sketch (Fig. 4), the cradle is suspended by two single ropes attached at the top of the building, or at any required level, to steel or timber cantilevers, and passed round the friction drums for a number of turns sufficient to insure

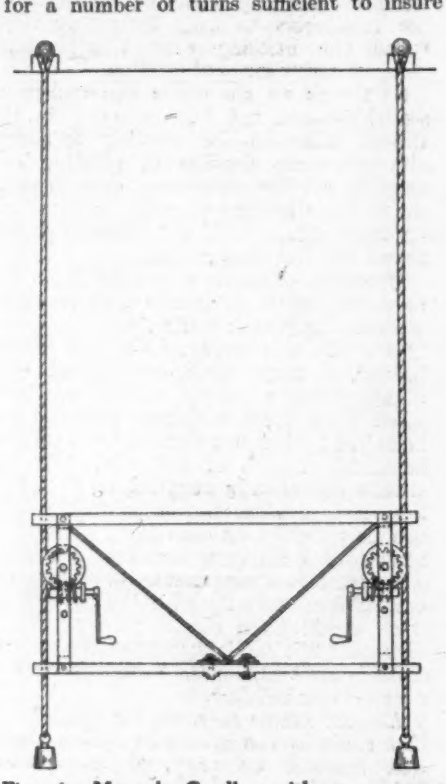


**Fig. 4. Moore's Cradle, with worm gear hoisting tackle.**

adequate grip, the free end of each rope being kept taut by means of a 28-lb. weight.

The drums are rotated by means of worm gear operated by handles, as shown in the drawing. The cradle is raised and lowered by turning the handles, and, assuming the grip on the drum to be quite secure, the cradle cannot move unless the handles are turned. Friction drums are quite familiar to users of steam winches, and can be designed to sustain far greater weights than any involved in the support of builders' cradles, while the valuable properties of worm gear are equally well known. Hence the mechanical device for raising, lowering, and holding this cradle is evidently superior to the usual method of hauling ropes through blocks and making fast the free ends.

The only feature deserving special notice in the construction of the cradle itself is represented by the adjustable guard rollers attached at each end of the inner handrail. These rollers are fitted to the end of a steel rod arranged to slide out through a bearing or collar when in contact with the face of the building; they are locked in position by a simple form of grip, and serve to keep the cradle from swaying about.

By the employment of two single ropes in the manner described the builder avoids the complicated series of six ropes required for the customary blocks, the labour of reeving ropes through blocks, and coiling spare rope on the ground when the cradle is at the top of the building. Moreover the men working in the cradle are spared the troublesome and somewhat risky operation of untying and retying the ropes every time the cradle has to be moved.

We have no doubt that if British building contractors take up the latest American form of suspended scaffold practice the makers of cradles already on the market will be quite ready to meet them by the construction of suitable plant.

## LONDON MASTER BUILDERS' ASSOCIATION.

THE annual general meeting of this Association was held in the Council Chamber at Koh-i-Noor House, Kingsway, on Monday, the 27th ult., the President, Mr. L. Horner, occupying the chair.

The minutes of the last general meeting having been read and confirmed, the annual Report of the Council was received and adopted.

The accounts and balance sheet for the year ending December 31, 1910, were received and adopted.

The following officers were elected for the ensuing year:—President, Mr. G. Bird Godson; Senior Vice-President, Mr. James S. Holliday; Junior Vice-President, Mr. Walter Lawrence; Junior Treasurer, Mr. W. F. Wallis, J.P.

The following gentlemen were elected to serve on the Council:—Messrs. W. Downs, T. Hall, J. W. Jerram, E. D. Pratt, H. Smith, F. Thorne, and F. J. Walton.

Mr. C. F. Kearley was elected Hon. Auditor.

The President, having acknowledged the honour conferred upon him, proposed a hearty vote of thanks to Mr. Leonard Horner, the retiring President, for the admirable manner in which he had conducted the business of the Association during the past year.

### A Week's Holiday for the Trade.

An interesting discussion took place respecting a universal week's holiday for the trade. The President opened the discussion, remarking that, although he admitted that no hard-and-fast rule could be laid down, as some firms might have urgent work in hand which it would be impossible to leave dormant for a whole week, it was undeniable that business in a builder's office was more or less disorganised through the summer months by one or more members of the staff being away for holidays; whether it was the chief clerk or the office boy, each adds his proportion to the disorganisation. His suggestion for remedying this dislocation of business was to close all works for the first week in August. The majority of works in progress are already closed from midday on the Saturday before the Bank Holiday until the following Thursday morning, leaving a total number of only twenty-three hours to be subsequently worked to complete the week. By closing down for the whole six days opportunity would be given for half the staff to take their vacation during the last week in July and the first week in August, the other half commencing on the Saturday before Bank Holiday. By this means, where a fortnight's holiday is the rule, the whole of the holidays are got rid of in three weeks. It was further contended that if this system was adopted it would be greatly welcomed by the merchants, and possibly by architects and surveyors, and it would also give an opportunity for the outside staff to obtain a week's rest, which, under the present system, they do not get.

The matter having been discussed, it was referred for the Council to deal with.

## MASTER BUILDERS' ASSOCIATIONS, etc.

### Redditch Master Builders' Association.

The fifth annual dinner of the Redditch Master Builders' Association was held at the Unicorn Hotel, Redditch, recently. Mr. A. E. Edkins (President) occupied the chair, and there were also present Alderman G. W. Hobson, J.P., Messrs. R. J. Webb (President of Birmingham Association), F. W. Amphlett (Secretary of Midland centre), L. F. Lambert, C.C., J.P., and others. Alderman G. W. Hobson proposed "The Redditch Master Builders' Association." He said every master builder in Redditch and some of the master builders from the surrounding neighbourhood were members. Mr. Hobson referred to the lamented death of Mr. Thomas Huins.

The President, whose name, with that of the Vice-President (Mr. Holloway), was coupled with the toast, responded. The President referred to the success of the Association. He expressed his approval of the trade unionist movement for the men, and said such combinations of men and masters tended towards peace rather than strife, in support of which he pointed to the fact that there had been no local dispute between local masters and men since the formation of the Association. Should any difficulty occur it would be submitted to the conciliation boards for settlement.

Mr. J. Gross proposed the toast of "The Local Governing Bodies," and Mr. Lambert replied.

Mr. Huxley proposed the toast of "The Visitors," coupled with the names of Messrs. F. W. Amphlett, Webb, and Jameson.

Responding, Mr. Amphlett, speaking of the work of the National Federation, said last year when the Chancellor of the Exchequer found that builders, amongst other people, were very much perturbed by the Finance Act, he invited some of the members of the Federation to meet him and discuss the question. They felt that it was a feather in the cap of the Federation that one of the Cabinet Ministers should have recognised the Federation as the representative body for the builders. Many local authorities in this country when they were placing a contract made their engineer sole arbitrator. Members of the Federation regarded that as very unfair. They considered that an engineer was a paid servant, and that he could not do justice between the two parties. The Federation had taken the matter up, and a deputation had waited upon the municipal engineers. They had confidence in hoping that as a result of that interview some method would be adopted by which an alteration would be effected, and that an arbitrator would be appointed who was independent. Mr. Amphlett urged members to take an interest in the work of the Association, and of the Federation. It was not fair to leave the work of the Federation to a few who sacrificed the time and energy to carry it on. The one thing in the centre last year which was unsatisfactory was in regard to the collective insurance scheme. This caused the Committee and himself very great anxiety, which might have been avoided if every member had taken an interest in the matter.

Mr. Webb, who also responded, spoke of the effect which the proposed scheme of national insurance for unemployment would have upon the building trade. He said it was a most serious thing for the employers. He believed that the proposed contribution by the employer was about 2½d. or 3d. for each man. There were something over a million men employed in the building trade, and the contribution at 3d. a man would amount to 12,500*l.* a week, or 650,000*l.* a year. Supposing a builder employed 150 men, it would mean that he would have to pay 9*l.* 10*s.* per year whether he was making a profit or not. The more work they did the more they would have to pay. With the state of trade and the cutting of prices he did not think that any of the builders were making much, but if this proposal was carried out they would have to pay out of their losses. This, coupled with workmen's compensation for accident insurance, would prove a very heavy burden for all builders. They all wished to see some scheme that would benefit the genuine unemployed, but a scheme like this they could only look at with alarm. It proved to them the value of the Federation. United they might do something, but individually they never would. He did not want them to take his figures as strictly correct, but they were somewhere about the mark. When they considered that the men had to provide an amount equal to that of the employers, and that of the State, the figures became huge for the Government to deal with. It appeared to him that the matter would resolve itself into the men getting a few thousand pounds or so at a considerable cost for distribution. The members of the building trade were willing to do their share, but they did not want additional heavy burdens at the present moment.

Mr. Jameson also replied.

The toast of "The Architects" was proposed by Mr. Newbould.

Mr. A. J. Dickinson and Mr. F. F. Baylis replied.

Proposing the toast of "The President and Vice-Presidents," Mr. Lambert referred to the improvement that had taken place in the architecture of houses that had recently been erected, but pointed out that there were still a considerable number of ugly houses built. It was very difficult to decide who should adjudicate upon plans, because the person must be an architect, and if they referred them to any architect the reference was always open to criticism that the architect was biased in some direction or another. If there could be some machinery for referring all plans to some architect, or board of architects, it would not only be a help to architects, but also to builders and their clients. When a man decided to build a house he had distinct views of how he would like the house to be built, although he might have very hazy views as to architecture. If he had some independent guide the result would be very much more satisfactory to himself, even if at the start he could not quite agree with it. As Mr. Newbould had said, the clients of builders wanted the best value for their money—the best accommodation for a certain price. The beauty of architecture lay in the form of building rather than ornamentation. He did not know whether the buildings that one saw at Bournville were built upon strictly commercial lines, but they could not help being struck, in walking through Bournville, with the admirable work that Messrs. Cadbury had carried out there. If the master builders could advance a step in that direction in the Redditch district they would be performing a very good work.

Musical honours were accorded the toast, and, in reply, the President touched upon the question of architecture. He said they would find it very difficult to build the kind of houses that they saw at Bournville on some of the sites at Redditch. With a street in which every plot of land was the same size—12 yds. in width—it was impossible to avoid similarity in the style of houses. He sometimes thought it would be an advantage if the size of the plot was varied, so that a man could buy 7 yds. instead of 12 yds. or 18 yds. width of land. Speculation in house property in Redditch was for the greater part undertaken by builders. The demand was for houses for which the rent was 6s. 6d. per week, and when two houses of this character were built on a plot it was almost impossible to alter the style. Mr. Holloway (Vice-President) also replied.

Mr. F. C. Huins submitted the health of "The Secretary" (Mr. Turner), of whose interest in and services for the Association he spoke in eulogistic terms. Mr. Turner briefly replied.

## GLASGOW BUILDING TRADES EMPLOYERS:

### CONDITIONS OF CONTRACT.

THE annual meeting of the Building Trades Employers' Council took place on the 27th ult. in the office of the Secretary. Mr. Robert S. Renfrew, Chairman of the Council, presided. The Report on the affairs of the Council and of the work done during the past year was submitted. It stated that the negotiations with the Institute of Architects for the alteration of conditions of contract had been continued throughout the year, and that although no formal agreement had yet been come to, the Council of the Institute had agreed to recommend to their Council that a number of alterations be made, the more important of these alterations being:—(1) That proprietors be taken bound in the schedule to pay the cost of work done or material supplied by contractors on the instructions of the architect, although same are variations of the terms of schedule; (2) that the architect or measurer on job should not be sole arbiter, but that differences or disputes should be referred to a neutral arbiter previously named in schedule or mutually chosen by the parties to the contract; (3) that the principal contractor give the names of all his sub-contractors when sending in his schedule; (4) that schedules be made out for each branch of work where possible; (5) that manufacturers of proprietary articles specified in any schedule should be bound by the general conditions governing the principal contractor. The Report further stated that negotiations were going on with the Institute of Measurers, and that in the near future it was expected a satisfactory settlement regarding the alterations would be arrived at.

It was explained that be negotiation with the Building Regulations Committee of the Glasgow Corporation numerous amendments in the interests of the various departments of the building trade had been secured on the by-laws framed by the Corporation under the Glasgow Building Regulations Act, 1900.

The Report further stated that owing to complaints being received regarding certain contracts being scheduled in one schedule instead of the usual practice being followed of scheduling each branch of work separately, the Council had considered the matter, and had decided strongly to oppose the introduction in the building trade of the single-contractor method of executing building work.

The Report was, on the motion of the Chairman, seconded by Mr. John Allan (Wrights' representative), approved. The following office-bearers were appointed for next year, namely:—Chairman, Mr. William H. Baxter, wright, 20, Catherine-street; Secretary and Treasurer, John Wylie, writer, 204, St. Vincent-street.

## INCORPORATED CLERKS OF WORKS' ASSOCIATION.

MR. LEONARD STOKES, F.R.I.B.A. (President of the Royal Institute of British Architects), took the chair at the annual dinner of the Incorporated Clerks of Works' Association, held on Saturday at the Holborn Restaurant, and was supported by Messrs. A. W. S. Cross, F.R.I.B.A.; W. Woodward, F.R.I.B.A.; Guy Dawber, F.R.I.B.A.; J. Gandy; Colonel Preston (Past-Master of the Carpenters' Company); G. Godson, etc.

Mr. C. W. Denny (Vice-President of the Association) submitted the toast of the "Architects and Surveyors," and remarked that if only architects were given a freer hand with regard to cost he believed many of them were capable of erecting buildings which would be fitting monuments of a great age and a great nation.

Mr. Guy Dawber, F.R.I.B.A., in replying, contrasted the duties of the architects of the present day to what they were not later than 120 years ago. He did not think an architect who loved his work would wish to go back to that time, and he could also say that in their present-day difficulties they owed the clerks of works a great debt of gratitude for the assistance they gave them.

Mr. Jas. Gandy recalled the fact that forty years ago he was much mixed up with clerks of works. They would perhaps be surprised to learn that their Chairman himself acted as clerk of works to a very big job when he was quite a young man.

Mr. J. Aitchison proposed the toast of "The Worshipful Company of Carpenters." He referred to the technical lectures which the Company had arranged for years, and urged that young men in the building trades should attend them, for with the passing away of the apprenticeship system this was the only means that young men had of obtaining information on many points relating to the building trades.

Colonel Preston replied, and remarked that his Company were only too pleased to do what they could to assist in the technical instruction of young men in the building trades.

Mr. W. Lake, in submitting the toast of the "Builders," said that there were many in the trade whom they must all admire for their personal integrity, grand organisation, and financial genius.

Mr. Geo. Godson acknowledged the toast, and said he could look back to many years of the most cordial relations with clerks of works.

The Chairman, in proposing "The Incorporated Clerks of Works' Association," said he was himself a clerk of works once. It happened that he was trying to get into Mr. Street's office, and Mr. Street told him he could go as clerk of the works to Dublin Cathedral. When he got there he found about 200 men of different trades at work.

Mr. Joseph Davies (President of the Association) acknowledged the toast, and said that was their twenty-eighth annual dinner. The Association had endeavoured to produce good clerks of works, and he could say that their members were at least as good as any clerks of works. The position of a clerk of works was somewhat isolated, and the Association was formed for mutual intercourse and improvement. He trusted that young architects who were at a difficulty to find good clerks of works would remember the Association. Mr. Davies proceeded to deal with various types of clerks of works, and remarked that with an experience of twenty-five years he had never yet met with a builder who had attempted to bribe him. In conclusion, he referred to the salaries paid to them, which he did not think had advanced in anything like the same proportion as had the wages of the workmen in the building trades.

Mr. J. Williams proposed the "Visitors," and the toast was responded to by Mr. J. Sabey.

The health of the Chairman was drunk with enthusiasm on the proposition of Mr. G. W. Ramplin, and, in reply,

Mr. Stokes alluded to the Benevolent Fund of the Association, which had been founded really at the instance of Mr. W. Woodward.

In response to a general request, Mr. Woodward added a few words, and said he trusted that the Association would eventually get a strong Benevolent Fund. As regarded architecture and art, he said it seemed a perfectly hopeless task to expect the ruling powers in this country to do anything. In Paris 36,000,000*l.* had been voted for improvements, whilst in London they were spoiling a magnificent work for a paltry 200,000*l.*

## THE ESTATE OF THE LATE MR. HOWARD COLLS.

MR. JOHN HOWARD COLLS, of 26, Park-crescent, Portland-place, W., builder, joint Chairman of Messrs. George Trollope & Son and Colls & Sons, Ltd., of 5, Coleman-street, E.C., a director of the Builders' Accident Insurance, Ltd., of Messrs. Hobbs, Hart, & Co., Ltd., and of the House Property and Investment Company, Ltd., left estate of the gross value of 419,797*l.*, of which the net personalty has been sworn at 326,876*l.* Testator bequeathed:—

500*l.* to the Camberwell Provident Dispensary.

300*l.* to the Camberwell and Dulwich Pension Society.

300*l.* to the Builders' Benevolent Institution.

300*l.* to the Builders' Clerks' Benevolent Institution.

200*l.* to the Church Lads' Brigade, Catherine-street, Strand.

200*l.* to the Evelina Hospital for Sick Children.

500*l.* to the Royal Institute of British Architects.

The following bequests to *employés* or former *employés* of his business:—

200*l.* each to Henry Thomas Challacombe (for many years manager of his Dorking business), Edwin Brooks, and Octavius Newling.

100*l.* each to Thomas John Collins, Hubert Herbert Luetchford, and John Joseph Wilson.

750 10*l.* ordinary shares and fifty 10*l.* preference shares of Messrs. George Trollope & Son and Colls & Sons, Ltd., to Wallace Elliot, a fellow director of that company, if still a director at his decease.

## GENERAL BUILDING NEWS.

SCHOOL, RUTHERGLEN, GLASGOW.

A new school and manual instruction block have been erected at Rutherglen, at an estimated cost of about 23,000*l.* The school comprises two buildings—the school proper and the manual instruction block. In the latter provision is made for teaching laundry work, cooking, and housewifery to the girls, and joinery and metal work to the boys. A house for the janitor is also in this block. The main building accommodates 1,400 scholars. There are four entrances. The infants occupy the ground floor of the school, which is planned with a central hall. The building is three stories high. The central hall is fitted up as a gymnasium for the Swedish system of gymnastics. The stone is from the Gatelawbridge Quarries, and the slates from Buttermere Quarries. The heating of the main building is on the Plenum system, and that for the manual block low-pressure hot water. The architects are Messrs. D. Macnaughtan & Son, Glasgow.

ORPHAN SCHOOLS, CHEADLE HULME.

The foundation-stones of a new swimming-bath in connexion with the Warehousemen and Clerks' Orphan Schools, Cheadle Hulme, were laid recently. The bath is part of building extensions now in progress, and which comprise additional classrooms and additions to the dining-room wing. The swimming-bath is contained in a detached building. The bath is 75 ft. long by 25 ft. wide. Two additional classrooms are being added to the school building for the junior pupils, who are at present accommodated in a temporary wooden building. This is to be removed to the playing field and used as a sports' pavilion. When the dining-room extensions are completed they will give seating for 300 children. There will also be provided as part of this extension, extra dormitory space for about twenty beds. Mr. Walter Higginbottom is the architect and Mr. James Brown the builder.

BUILDINGS IN ABERDEEN.

The Plans Committee of the Town Council has approved of the following plans:—Four dwelling-houses on the east side of Forest-avenue, for the trustees of the late Mr. Archibald Duff, per Mr. G. F. Anderson,

architect; shop on the south side of Powis-terrace, for Mr. James Robertson, nurseryman, per Mr. George J. Milne, architect; alterations and additions in connexion with premises on the east side of Cuparstone-row, for Mr. James Monro, plumber, per Messrs. Brown & Watt, architects; additions to fishcuring premises on the west side of Raik-road, for Mr. Charles Goodall, fishcurer, per Mr. John Cameron, architect; shop on the east side of Powis-terrace, for Mr. John Webster, house agent, per Mr. G. F. Anderson, architect; Alterations and additions in connexion with fish oil manufactory at Albert Quay, for Isaac Spencer & Co. (Aberdeen), Ltd., per Messrs Brown & Watt, architects.

THE NEW QUEEN'S HALL, NEWCASTLE.

The New Queen's Hall, in Northumberland-street, Newcastle, for which the plans have been passed, provides a main hall covering an area of 128 ft. by 100 ft., with entrances to Lisle-street, leading into a vestibule. The main balcony on the first floor will be reached by two staircases leading to an upper foyer, and above there will be a gallery with separate entrances and exits. The stage at the opposite end will be adapted to concerts, oratorios, and high-class opera. Its construction will be fireproof, with separate entrances and exits, dressing and retiring rooms, chorus, and musicians. The seating accommodation of the auditorium will be for about 2,500 people, whilst at a promenade concert or other meeting the floor area can be increased by removing the ground-floor corridor walls, and throwing the whole floor area open from wall to wall, a width of 100 ft. The lower floor under the main hall will contain two lesser halls, about 104 ft. by 50 ft. each. The building will be of fireproof construction, and the estimated cost is 25,000*l*. Messrs. Graham & Hill, Newcastle, are the architects.

PROPOSED OBSERVATORY, DUNDEE.

It is proposed to erect an observatory on Balgay-hill, Dundee, from plans drawn by Mr. T. M. Cappon, architect, on the instructions of the Mills' trustees. The accommodation consists of a central hall, cloakrooms, room for transit instrument and two clocks, library and chartroom, microscope-room, etc. The cost of the building will be 3,000*l*.

LOCK HOSPITAL, HARROW-ROAD.

A new Nurses' Home has been opened at the London Lock Hospital, at a cost of 5,000*l*. The home, erected after the designs, in the early Georgian style, of Mr. Horace Porter, F.R.I.B.A., and Mr. Percy E. Newton, consists of a building in two stories, containing twenty bedrooms and two spacious day-rooms.

PROJECTED BUILDING IN LONDON.

Hampstead, N.W.—Cinematograph theatre, Fleet-road; Messrs. Homer & Lucas, architects, 35, Bucklersbury, E.C., and Oxford.

## TRADE NEWS.

Boyle's latest patent "air-pump" ventilators have been employed for the ventilation of the Naval Dirigible Balloon Shed erected by Messrs. Frances Morton & Co., Ltd., of Hamilton Iron Works, Garston, Liverpool, for Messrs. Vickers, Sons, & Maxim, Barrow-in-Furness.

Messrs. Patman & Fotheringham, Ltd., have obtained the contract for additions, alterations, and reconstruction of 82, Eaton-square, Belgravia, S.W., for the Dowager Marchioness of Sligo, under Mr. Walter Sarel, architect.

Mr. G. W. Rhead has designed a graceful little book-mark for Mr. B. T. Batsford, bookseller and publisher, of High Holborn.

Messrs. A. J. Staines & Co., Ltd., builders and decorators, of 46, Bishopsgate, and works at 154, Great Titchfield-street, W., ask us to state that they are not connected with the firm of "Staines & Son," builders, of 61, Great Eastern-street.

The Sanatorium, Charterhouse, Godalming, is being warmed and ventilated by means of Messrs. D. O. Boyd's "Hygiastic" independent warm-air stoves, supplied by Messrs. O'Brien, Thomas, & Co., Upper Thames-street, London, E.C., and Excelsior Works, Rollins-street, S.E.

The Isolation Hospital, Stanhope, is being supplied with Shorland's warm-air ventilating patent Manchester grates, exhaust roof ventilators, and special inlet ventilators by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

A stained glass window, by Messrs. Percy Bacon & Brothers, of London, has been erected in Meavy Church, Yelverton, Devon. The centre light contains the figure of Our Lord, as Christus Consolator, and in the side lights are represented the Blessed Virgin Mary, on the left, and Mary Magdalene on the right; angels appear in the tracery openings above.

"Sideroleum" and "Stoniflex" are two specialities introduced by the firm of Messrs. D. Anderson & Son, Ltd., of Lagan Works, Belfast, and Roach-road Works, Old Ford, London. "Sideroleum" is a wood-preservative, which has the effect of hardening the wood so as to make it impervious to moisture, and proof against attacks of vermin, dry-rot, fungus, and insects. It penetrates the pores of the wood and alters its character, while it imparts a nut-brown or green colour (according to the colour used). "Stoniflex" roofing felt has been upon the market for some years. It presents a weather-proof surface, and ensures complete protection from wet. It does not require an annual coating.

## APPLICATIONS UNDER LONDON BUILDING ACTS, 1894 to 1909.

**At Tuesday's meeting of the London County Council the following applications under the London Building Acts were dealt with (the names of the applicants are given between parentheses):—**

*Lines of Frontage and Projections.*

*Hackney, Central.*—Covered way at the Metropolitan Hospital on the southern side of St. Peter's-road, Hackney (Messrs. Young & Hall).—Consent.

*Hackney, North.*—Porches, hoods, and bargeboards to six houses on the southern side of Osbaldeston-road, Hackney (Messrs. E. Evans & Sons).—Consent.

*Hammersmith.*—Projecting iron and glass shelter in front of the Clarendon Restaurant, The Broadway, Hammersmith (Messrs. Lovegrove & Papworth for Mr. H. Foreman).—Refused.

*Hampstead.*—Two one-story wooden bay windows at Rickford Lodge, The Grove, Hampstead (Messrs. Bannan & Rowe).—Consent.

*Kensington, South.*—Iron and glass shelter over the Brompton-road entrance to the Knightsbridge Tube railway-station, Kensington, so far as relates to the alterations shown on the plan (Mr. F. E. Knapp).—Consent.

*Marylebone, East.*—Buildings with a projecting porch upon the site of Nos. 70 to 78 (even numbers only), inclusive, Portland-place, St. Marylebone (Mr. F. T. Verity for Mr. G. Paxton).—Consent.

*Norwood.*—Bay windows, porches, and oriel windows in front of eight houses on the south-eastern side of Ferndene-road, Lambeth, and the erection of covered ways at the rear of such houses (Mr. H. G. Morrell).—Consent.

*Norwood.*—Iron structure on the forecourt of No. 323, Norwood-road, Norwood (Mr. F. P. Ferguson for the trustees of the South London Botanical Institute).—Consent.

*Paddington, North.*—Oriel windows and an enclosure to an existing porch and iron and glass shelter at No. 189, Maida-vale, Paddington (Messrs. Vigor & Co.).—Consent.

*St George, Hanover-square.*—Building upon a site at the rear of No. 36, Belgrave-square and abutting upon Upper Belgrave-street to the line and with a porch in front (Mr. F. W. Foster).—Consent.

*St. Pancras, North.*—Portico and approach steps at Lyndhurst Hall, Warden-road, Kentish Town (Messrs. Spalding & Myers).—Consent.

*St. Pancras, South.*—Projecting facia supported on brackets in front of No. 49, Euston-road, St. Pancras (Mr. A. Davis).—Consent.

*Wandsworth.*—Projecting hood to a building on the eastern side of Valley-road, Streatham (Messrs. Gibson, Skipwith, & Gordon for Messrs. Curtis Brothers).—Consent.

*Westminster.*—Pilasters in front of a building abutting upon the northern side of Greycoat-place, Westminster, and the western side of Strutton-ground (Messrs. Barlow & Roberts for Messrs. Hodgkinson, Ltd.).—Consent.

*Width of Way.*

*Hampstead.*—Building in the garden of The Grove, Hampstead (Messrs. Holloway Brothers).—Consent.

*Wandsworth.*—One-story building at the rear of No. 292, Streatham High-road, Wandsworth, at less than the prescribed distance from the centre of the footway on the southern side of Streatham Green (Mr. L. Moore for Messrs. C. Crowther & Son).—Consent.

*Width of Way and Line of Frontage.*

*Newington, West.*—Building on the southern side of Hampton-street, Walworth, with a forecourt boundary at less than the prescribed distance from the centre of the roadway of the street (Mr. F. H. Mathews).—Consent.

*Lines of Frontage and Construction.*

*Fulham.*—Extend the licence in respect of the temporary wood and iron building at the rear of No. 56, Harwood-road, Fulham (Mr. Stoop).—Consent.

*Hammersmith.*—Extend the licence in respect of the temporary office building in the area at No. 49A, Sulgrave-road, Hammersmith (Mr. R. Cotter).—Consent.

*Strand.*—Projecting iron and stone balconies and the erection of two iron and glass shelters at the Royal Adelaide Gallery, King William-street, Strand (Messrs. Strode & Co.).—Consent.

*Strand.*—Iron and glass shelter in front of the Oxford-street entrance to the Oxford Circus Tube railway-station, Westminster (Mr. W. E. Mandelick for the London Electric Railway Company).—Consent.

*Width of Way and Construction.*

*Battersea.*—Extend the licence in respect of the temporary wood and iron building at Bridge Wharf, Wellington-road, Battersea (Messrs. Phillips, Mills, & Co.).—Consent.

*Line of Fronts and Deviations from Certified Plans.*

*Strand.*—Four balconies, and do sanction certain deviations from the plans certified by the district surveyor, so far as relates to the re-erection of Nos. 18 and 19, Burlington-street, Strand (Messrs. Ernest George & Yeates).—Consent.

*Lines of Frontage and Alteration of Buildings.*

*Chelsea.*—No. 33, Sloane-street, Chelsea, from a dwelling-house into shop premises, and to the erection of an addition at the rear to abut upon Hans-crescent (Mr. W. R. Low for Madame Lavender).—Consent.

*Space at Rear.*

*Kensington, North.*—Addition at the rear of No. 65, High-street, Notting Hill (Mr. H. W. Ford for the Metropolitan and District Railway Companies).—Consent.

*Strand.*—Erection of No. 10, Duke-street, Piccadilly, with an irregular open space at the rear and with the rear portion extending above the diagonal line (Mr. C. W. Stephens).—Consent.

*Working-Class Dwellings.*

*Chelsea.*†—Dwelling-houses upon a site abutting upon the northern side of Cale-street, the eastern side of Leader-street, the western side of College-street, and the south-eastern side of Marlborough-street, Chelsea (Mr. E. C. P. Monson for the Sutton Trust).—Refused.

*Deviation from Certified Plans.*

*St. George, Hanover-square.*—No. 17, Grafton-street and No. 24, Albemarle-street (Messrs. Ernest George & Yeates).—Consent.

*Height of Buildings and Construction.*

*City of London.*—Building on the southern side of Fenchurch-street, flanking upon Lloyd's-avenue, with the flank exceeding in height the width of Lloyd's-avenue, minature rifle range of a temporary character on the flat roof of such building (Messrs. Collcutt & Hamp).—Consent.

*Separation and Alteration of Buildings.*

*Hackney, Central.*—Wooden enclosure on the top floor of Nos. 173-5, Lower Clapton-road, Hackney (Mr. J. D. Scott for the American Lead Pencil Company).—Consent.

*Formation of Street.*

*Lewisham.*—Street for carriage traffic to lead from Ravensbourne Park-road to Ravensbourne Park-crescent, Lewisham (Mr. A. W. Osborn).—Consent.

*Uniting of Buildings.*

*Chelsea.*—Nos. 2 and 3, Sloane-square, Chelsea, by means of openings at the first, second, and third floor levels (Mr. A. F. Faulkner).—Consent.

*City of London.*—Party wall between Nos. 64 and 65, Crutched Friars, City, and construction of the gangway at the rear of the second floor (Mr. G. R. Julian for Sir J. G. Tollemache Sinclair, Bart.).—Consent.

*Marylebone, West.*—Nos. 72, 73, and 74, High-street, St. Marylebone (Messrs. Webster & Son for the Rev. Stuart Holden).—Consent.

*Southwark, West.*—Doors of special construction in lieu of iron doors to openings in a division wall between Nos. 48 and 50, Southwark-street, Southwark (Mr. A. L. Champneys for Messrs. Wright, Leyman, & Umney, Ltd.).—Consent.

*Westminster.*—Division wall opening between two divisions of a building abutting upon Rochester-row and Coburg-row, Westminster (Mr. F. J. Barrett for the Army and Navy Auxiliary Co-operative Society, Ltd.).—Consent.

*Cubical Extent and Uniting of Buildings.*

*Paddington, South.*—Rolling steel shutters in lieu of iron doors to eighty-four division wall openings at the premises of Messrs. W. Whiteley, Ltd., Queen's-road, Bayswater (the Wilson Roller Shutter Company).—Consent.

***The recommendation marked † is contrary to the views of the metropolitan borough council concerned.***

## PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERDEEN. — Extensions to fish oil manufactory for Messrs. Spencer & Co., Ltd. (2,150*l.*), also additions to premises, Cuparstone-row (2,500*l.*); Messrs. Brown & Watt, architects, 17, Union-terrace, Aberdeen.

Aberlour.—Extensions to orphanage (3,000*l.*): Messrs. A. Ross & Son, Queensgate, Inverness.

Aberystwyth.—Hospital, Ystwyth; Mr. Rees Jones, Surveyor, Aberystwyth Town Council.

Alresford.—Hotel, Tichborne Down, for the Lion Brewery Company, Winchester.

Armagh.—Church-house, opposite cathedral (4,500*l.*); Mr. Sampson Jervis, Armagh, and Mr. R. Caulfield Orpen, Dublin, joint architects.

Baslow.—Additions and improvements to church; Mr. D. Sheldon, builder, Baslow.

Belfast.—Extensions to Carrick House and baths; City Engineer, City Hall, Belfast.

Benfieldside.—School, West-row; Mr. W. Rushworth, architect, Shire Hall, Durham.

Bodmin (Cornwall).—Cottage homes (1,200*l.*); Architect, care of J. Pethybridge, Clerk, Board of Guardians, Bodmin.

Bolton.—Electric theatre; Mr. W. Constantine, Bolton.

Bournemouth.—Proposed alterations and additions to Malmesbury Park School; Architect, care of the Secretary, Education Committee, Bournemouth Town Council.

Bristol.—Additions to mills, Redcliffe Back, for Messrs. Spillers & Bakers.

Bromyard.—Post-office, Charles-street; Mr. W. H. Skyrme, architect, Wildemarshe-street, Hereford; Mr. Wm. James, builder, Bromyard.

Brownhills. — Schools; Mr. Hutchings, County Architect, Stafford.

Buckhaven (Fife).—Hospital; Mr. Telfer, Borough Surveyor, Buckhaven.

Burbage.—New institute; Vicar, parish church.

Bycliffes (Gravesend).—Various buildings for the Imperial Paper Mills.

Cardiff.—Proposed assembly hall, Cathays Park (10,000 places); Mr. W. Harpur, Engineer and Surveyor, Cardiff Town Council.

Castle Hill (Todmorden).—School (5,200*l.*); Mr. B. Lamb, builder, Todmorden.

Churchdown.—Additions to school; Mr. R. S. Phillips, architect, The Cross, Gloucester.

Consett.—Enlargement of Parish church (2,500*l.*); the Vicar.

Coseley.—School, Parkfield district (500 places); Mr. F. J. C. Poole, Secretary, Education Committee, Coseley Urban District Council.

Cramond.—Enlargement of parish church (2,700*l.*); Vicar of Cramond.

Crombie.—Explosives magazine near Rosyth naval base (100,000*l.*); Messrs. Robt. Bruce & Son, builders, 25, Greenside, Edinburgh.

Darlaston.—Drill-hall; Mr. C. Cowlishaw, architect, Stafford-street, Hanley.

Dearnley. — Proposed extensions to St. Andrew's Church (1,500*l.*); the Vicar.

Doncaster.—Proposed garage, Town Moor-avenue (4,000*l.*); Mr. F. O. Kirby, Surveyor, Doncaster Town Council.

Dudley.—The following plans have been passed:—Additions to laundry, King-street, Mr. C. Suckling; parish hall, High-street, Rev. A. J. Gray Maitland; rebuilding "Three Furnaces" inn and house, Lawley-street, for the Wolverhampton and Dudley Breweries, Ltd.

Durham.—Institution for defective children (12,800*l.*); Messrs. J. L. Robson and A. J. Dawson, joint Secretaries, Education Committee, Durham County Council, Durham. Church hall, etc.; Mr. H. T. Gradon, architect, Market-place, Durham.

Eastbarns.—Extensions to school (2,000*l.*); Mr. R. Orr, architect, Haddington.

Eastbourne.—The following plans have been passed:—Fourteen houses, Wannock-road, Mr. W. Hookham, builder; additions to Queen Alexandra Cottage Homes, Seaside, Mr. P. D. Stonham, architect; additions to Pembury Lodge, Staveley-road, Messrs. G. Bainbridge & Son, builders; alterations to Walden Lodge, Carlisle-road, Mr. F. G. Cook, architect; alterations to warehouse, Grove-road, Mr. P. D. Stonham, architect; addition to Holly Grange, Mr. J. W. Woolnough, architect, Messrs. G. Bainbridge & Sons, builders. A plan has been lodged by Mr. F. G. Cook, architect, for additions to London and County Bank, Meads-street.

East Preston.—Enlargement of workhouse laundry; Guardians, East Preston.

Eccles.—Proposed extensions to Eccles and Patricroft Hospital; the Secretary. The following plans have been passed:—Thirteen houses, Monton Fields-road, Monton, Mr. Lawrence Barlow; extensions to mill, Silk-street, Messrs. John Bethel & Sons; additions at Stafford House, Ellesmere Park, Mr. C. Edmeston; additions to bank premises, Liverpool-road, Patricroft, for Parr's Bank, Ltd.

Edinburgh. — School, Fountainbridge (10,000*l.*); Mr. J. A. Carfrae, architect, 3, Queen-street, Edinburgh.

Felixstowe.—Roman Catholic Church; Mr. F. B. Bainham, architect, Beccles; Mr. Fredk. Thurman, builder, Walton.

Folkestone.—Plans have been passed as follows:—Church-house and Sunday schools, St. John's Church-road, Mr. A. Bromley, architect, Messrs. G. Castle & Son, builders; additions to Alverstone, 5, Julian-road, Mr. R. Pope, architect, Mr. W. Dunk, builder.

Glasgow.—Buildings, St. Vincent-street, for the Scottish Temperance Life Assurance Company, Ltd.

Gloucester.—Parish hall; Vicar, St. Mark's Church.

Grantchester.—School (3,000*l.*); Mr. A. Dunn, architect, Sidney-chambers, Cambridge.

Gravesend.—Public baths (1,752*l.*); Mr. Thos. Burrows, builder.

Great Harwood (Lancs).—Proposed workmen's dwellings; Mr A. H. Dunkin, Surveyor, Great Harwood Urban District Council.

Great Sutton (Chester).—Vicarage; Rev. P. Douglas.

Haddington.—Business premises and house (2,150*l.*); Mr. R. Orr, Haddington.

Hanlith Hall (near Skipton).—Extensions to hall (1,500*l.*); Mr. P. Brown, North Park-road, Harrogate.

Hazelrigg.—School; Mr. C. Williams, Secretary, Education Committee, Northumberland County Council, Newcastle.

Helensburgh (Dumbarton). — Gymnasium, etc., at Hermitage School (1,500*l.*); Mr. A. N Paterson, architect, Glasgow.

Hereford.—Enlargement of Free Library; Messrs. Groome & Bettington, architects, King-street, Hereford; Messrs. Wilkes & Son, builders, Hereford.

Hoole (Chester).—School; Mr. A. E. Lovell, Secretary, Education Committee, Chester Town Council.

Huntingdon. — Additions to hospital; Managers, County Hospital, Huntingdon.

Inchicore.—Dwellings (13,000*l.*); Mr. G. P Walsh, builder, Harolds Cross, Dublin.

Jersey.—Hall (2,000*l.*); Vicar, St. John's.

Kirkcaldy.—Additions to works, Oswald's-wynd, for the Allen Lithographic Company.

Lossiemouth.—Church (3,000*l.*); Mr. R. B. Pratt, High-street, Elgin.

Luton.—Isolation hospital; Mr. S. F. L Fox, Surveyor, Luton Town Council.

Merthyr.—Cottage homes (1,613*l.*); Clerk, Merthyr Board of Guardians.

Middlesbrough. — Parish hall; Vicar, St. Barnabas' Church.

Nelson.—Baths (9,500*l.*); Mr. B. Hall, Surveyor, Nelson Town Council.

New Rattray.—Church (400 places) and hall (200 places) for the Rattray United Free Church.

Northampton.—The following plans have been passed:—Six houses, Spencer-street, Mr. G. F. Sharman; additions to premises, corner of Billington-street and Bostock-avenue, Mr. T. Merriman; four houses, Forfar-street, Mr. J. Gossage; eight houses, Dundee-street, Mr. W. Higgins; alterations to premises, corner of Carlton-road and Junction-road, Mr. E. J. Hunt; additions to factory, Newland, Mr. S. Wright; six houses, Lloyd-road, Mr. A. Wilford.

Oldham.—Additions to Town Hall (29,500*l.*); Mr. E. C. Foote, Surveyor, Oldham Town Council.

Peebles.—Additions to Chambers Institute, High-street (10,000*l.*); Mr. G. Washington Browne, architect, 8, Albyn-place, Edinburgh.

Pengam.—Isolation hospital (12,000*l.*); Mr. P. V. Jones, architect, Hengoed, Cardiff; Mr. Richard Jones, builder, Caerphilly.

Penrith.—Underground lavatory, Market-square; Surveyor, Penrith Urban District Council.

Perth.—Extensions to infirmary (10,000*l.*); Mr. Jas. Miller, 15, Blythswood-square, Glasgow.

Plymouth.—Territorial barracks, Millbay; Mr. F. A. Clark, architect, 83, Old Town-street, Plymouth; Messrs. Shellabear & Son, builders, Plymouth.

Pokesdown (Bournemouth). — Church (12,000*l.*); Churchwardens, St. James' Church.

Pontypridd. — Nurses home; Board of Guardians.

Portadown. — Terrace of houses for the Portadown Weaving Factory.

Porthcawl. — Theatre, Johns'-street; Colliseum Company, Ltd., Porthcawl.

Radcliffe.—School (3,500*l.*); Messrs. Sellars & Orrell, architects, Union-street, Bury.

Rochester.—Seventeen houses, Balfour-road; Mr. E. Graham, Rochester.

Rotherham.—Public hall, Pigeon-lane; Mr. E. B. Martin, Borough Engineer, Rotherham Town Council. The following plans have been passed:—Rebuilding of "Carters' Rest" public-house, College-road, for the Worksop and Retford Brewery Company, Ltd.; building, Glasshouse-street, Messrs. William Thornton & Son.

Scunthorpe.—Church and school; Messrs. G. Baines & Son, architect, Clement's-inn, W.C.

Sheffield.—Conveniences (1,700*l.*); Mr. C. F. Wike, City Engineer, Sheffield City Council. Additions at Neepsend power-house (1,450*l.*); Messrs. Wellerman Bros., builders, 223, Attercliffe-road, Sheffield. Headquarters and drill-sheds, Smithfield Market; Lieut.-Col. Branson, Commander, 4th (Hallamshire) Battalion, York and Lancaster Regiment. Refreshment-room and conveniences, Norfolk-park; Mr. F. E. P. Edwards, Architect, Sheffield City Council. The following plans have been passed:—Additions to premises, Craven-road, for the Brightside and Carbrook Co-operative Society, Ltd.; extension of planing department, Upwell-street and Brightside-lane; additions to premises, Brightside-lane and Milford-street, and shop, Brightside-lane, for Messrs. Vickers, Sons & Maxim; forty-three houses, Hunter House-road, Mr. Charles Thompson; eight houses, Louth-road, Mr. R. Bradbury; alterations to premises, Bernard-road, for the Sheffield Corporation Electric Supply Department; six houses, Walkley-road, Mr. J. E. Nadin; eight houses, Elmham-road, Messrs. W. & E. Sadler; additions and alterations to premises, Smilter-lane, for the Sheffield Board of Guardians; eight houses, Shirland-lane, Mr. G. Wright; four houses, Banner Cross-road, Mr. Mallaband; eight houses, Flaxby-road, Mr. J. A. Sheldon; ten houses, Elmham-road, Mr. A. Swift; alterations to Crown Inn, Bessemer and Faraday roads, for the Old Albion Brewery Company, Ltd.; sixteen houses, Elmham-road, Mr. S. G. Bailey; four houses, Warminster-road, Mr. A. S. Woodhead; nine houses, Kilton-hill, Messrs. Coupe Bros.; additions and alterations to Gatefield Inn, Infirmary-road and Woollen-street, Messrs. D. Gilmour & Co., Ltd.; eight houses, Heavygate-road, Mr. W. May; additions and alterations to "Chantrey Arms" public-house, Bramall-lane, Messrs. D. Gilmour & Co., Ltd.; seven houses, High-lane, Mr. C. S. Sandford.

Shotton.—Hotel (3,000*l.*); Richard Darbyshire, G. Gune Arms Hotel, Hawarden.

Sonning Common.—School; Mr. G. Stallard, architect, 8, New-road, Oxford.

Southend.—Battery storage-room (1,700*l.*); Messrs. E. & B. H. Davey, builders, Ruskin Lodge, Victoria-avenue, Southend.

South Shields.—Theatre (6,000*l.*); Messrs. J. H. Morton & Son, N.E., Bank Chambers, South Shields.

Stanstead (Ware).—Village hall; Mr. J. H. Buxton, architect, Stanstead.

Stourport.—Drill-hall; Messrs. Pritchard & Pritchard, architects, Bank Chambers, Kidderminster.

Tullamore. — School; Mr. Thos. McNamara, architect, Dawson-street, Dublin.

Tyldesley. — School (6,000*l.*); Secretary, Atherton and Tyldesley Education Committee.

Warrington. — School, Oliver-street (420 places); Mr. J. M. Murray, Secretary, Education Committee, Warrington Town Council. The following plans have been passed:—Assembly hall, Cairo-street, Trustees of Friars' Green Chapel; additions to premises, Rose and Crown-street, Messrs. T. Whittle & Sons, Ltd.; thirty houses, Rhodes and Amelia streets, for Mr. W. Heesom.

Westhoughton.—Two proposed schools (400 places and 350 places respectively); Secretary, Education Committee, Westhoughton.

West Kirby. — Addition to West Kirby Children's Convalescent Home (800*l.*); the Governors.

Whittingham.—Proposed additional accommodation at asylum (700 patients); Lancashire Asylums Board.

Whorton.—Pavilion, club, etc., Marian-street, for the Winsford & District Conservative Association.

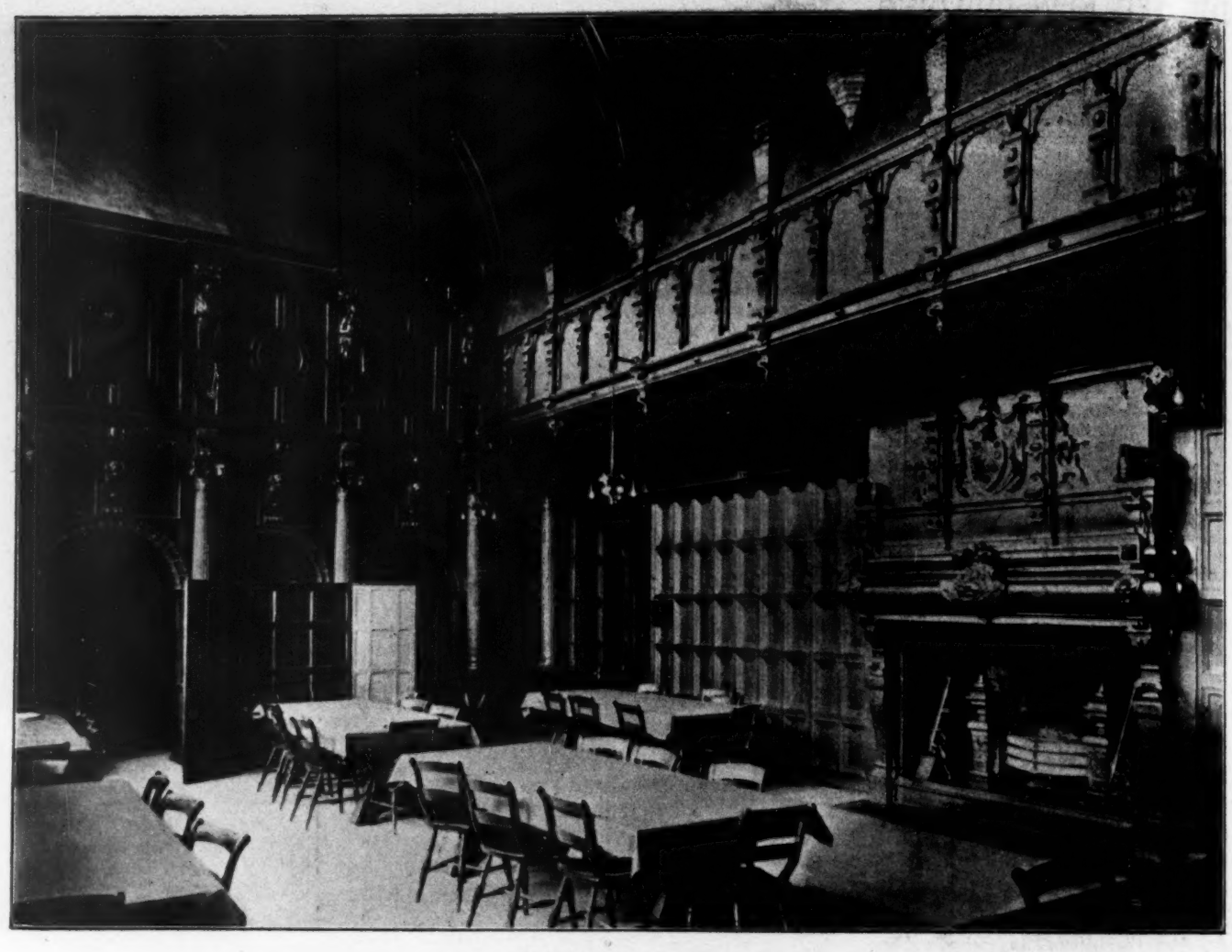
Wigan.—The following plans have been passed:—Ten houses, Widdrington-road, Mr. James Walkden; six houses, Meadows-street, Messrs. Makin & Mason; six houses, Platt-place, Mr. John Knowles.

Witley (Surrey).—Additions, parish church; Vicar, Witley, Surrey.

York.—Rebuilding White Swan Inn, The Pavement; Messrs. W. Mortimer & Son, architects, York.

Ystradgynlais (Brecon).—Council offices, The Square; Mr. T. Watkins, surveyor, Ystradgynlais.

* See also our list of Competitions, Contracts, etc., on another page.



The Hall, Charterhouse.

## CARPENTERS' HALL LECTURES:

### JOINERY IN OLD LONDON.

THE sixth of the present course of lectures on Arts Connected with Building, arranged by the Carpenters' Company, was delivered by Mr. Arthur Keen, President of the Architectural Association, on Wednesday last week in the Hall of the Company, London-wall, the subject being "Joinery in Old London." Mr. Robert Cobay, the Master, presided.

Mr. Keen, after some preliminary remarks, said he should speak about the decorative and artistic side of the work of the joiner, and in the course of his lecture he showed a large number of lantern-slides of woodwork. There were, he said, certain matters in the design of which the English had particularly excelled. Leadwork was one of them, plasterwork was another; but probably in nothing so much as in woodwork were they distinguished from the craftsmen of the countries across the Channel. In timber-built houses, in wonderful ships, in roofs of churches and halls, in beautiful joinery-work they could look back to a traditional past at a very high level and in a way that must have commanded the admiration of those best qualified to judge in every time. He had the opportunity of attending last summer at the examination for the certificates of this Worshipful Company, and while he came away admiring very much the technical ability that had been acquired by many of the candidates, he was distressed to find how far the knowledge gained seemed to depend on the text-books of construction, as if the height of a carpenter's ambition were to know how to frame a queen-post roof or a stud partition, or to form a match-board dado with a skirting and a capping, or to make a pair of French casements that would keep out the wet, but would be fit for nothing better than a Margate lodging-house. These things were well enough in their way, but they were only the beginning of what a carpenter ought to know; they were, as it were, the learning to write, but afterwards came the question of what to write! And he looked forward with confident hope to the time when carpenters would be men able to design their work in a capable way as well as to make it so well. He supposed there never was a time when one could get the work itself so well done as now, but, all the same, the average carpenter knew nothing worth talking about as to the design of his work so as to make it interesting in appearance and comparable with the work of the past. Now a carpenter ought easily to become a good designer, because he had the stimulus that was given by handling the actual material—a stimulus that was the greatest want of the architect who designed on paper. The material of work offered at once certain possibilities and limitations which were a very material help in design. A mason who was given an odd lot of stones and bricks and flints or pebbles with which to lay the pavement of a courtyard would produce a far more interesting result than if he had made a plan on paper, knowing that he would then be supplied with the material to carry it out.

The design of very much of the old timber-work, say, in the roofs of churches, depended very much on limitation and selection. Everyone had wondered at the fact that the roofs of old churches so often failed to fit the divisions of the stonework below them, and it was generally explained by pointing out that they belonged to a later date—which always seemed to him a very lame and inadequate explanation. He thought it was more probably due to the use of particular materials. The roof of St. John's Church at Leeds had the principals spaced quite irrespective of the stone piers and arches below, and yet this church, which was erected about the year 1634, was carried out completely at one time. He believed the reason in this case was that the roof was panelled throughout with most beautiful plaster panels, which were all of one size, and which seemed to have been taken as the unit of measurement controlling the divisions of the roof.

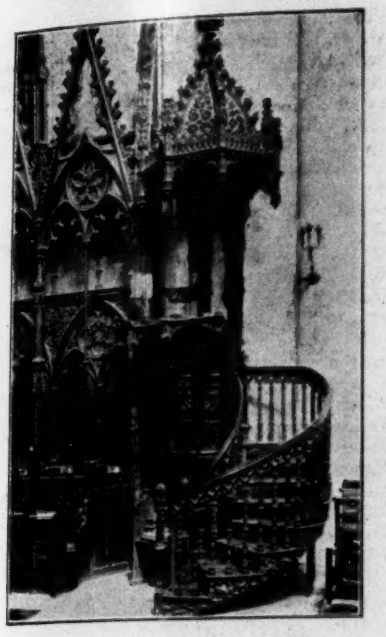
In the old days the cutting up of timber was a difficult and costly matter, and the quantity of suitable stuff available in one place was limited. There would be a certain number of pieces suitable in size and length for tie beams, a certain number that would make good purlins, some suitable for brackets, some that would have done for rafters if they had been longer, but were good for spurs or struts and so forth, and it was easy to see that these considerations would at once settle the kind of roof that could be made, the number of trusses, whether or not there should be smaller trusses between the main ones, how the trusses should be built up, whether the purlins should be near together or far apart, whether they should be strengthened by brackets or not, and so forth. He did not suggest that he was indicating the whole secret of the beauty and interest of an old timber roof, but he was quite sure that a great deal of it depended on the fact that the designer was the man who was handling the stuff and studying to make the most suitable and economical use of every piece. Of course, the great part of the secret lay in the fact that the men who made these wonderful roofs that we see in Suffolk and Somerset and other places had been taught their business as designers and not merely as workmen; they worked in the traditional way, and did the things that their fathers had taught them, with such improvement as their skill and imagination led them to.

It was worth while to go to Greenwich Hospital and see the models of some of the old XVIIth and XVIIIth century ships, and to marvel not only at the skill and judgment shown in their construction, but at the beauty of the lines and the charm of the purely ornamental parts.

Then there were those extraordinary models of Japanese temples or pagodas shown at Shepherd's Bush last summer. Beautiful things with fine curves, good proportions, and well-designed ornament; but a careful examination of them showed that nearly all their beauty arose out of the skilful way in which the timbers were put together to meet the requirements of the building.

Precisely the same thing had obtained in this country, for he never saw here a piece of building in wood that was not interesting in appearance, and most of our old wooden buildings were beautiful in design. In every one of the applied arts the designer, who was, or had been, also a practical workman, had a very great advantage over the mere studio man.

In talking about this to a man whose knowledge and judgment he thought highly of, he



**Winchester Cathedral: Choir Pulpit.**
(Wrong Treatment of Woodwork.)

said, "What is the good of it all? What is it going to lead to? A modern carpenter is little more than a fitter of parts already prepared by machines, and he has less and less opportunity for the exercise of his knowledge and skill. In fact, his only chance of expansion is by becoming something other than a carpenter—say, a builder or a joinery manufacturer, or something of that kind." Well, he (the lecturer) could not conceive of such skill and knowledge not adding to a man's value in the market. Apart from this consideration, however, was the fact that no craft that man ever put his hand to began and ended in mere workmanship; there was always an imaginative or intellectual side, full of interest and pleasure, and which was worth a vast amount of study and consideration for its own sake, and the craft of the woodworker possessed this aspect in a most unusual degree. The work of a joiner to-day was dull and uninteresting and very limited in comparison with that of past times when a man was actively engaged in design and contrivance during the whole time that he was at work. But whether or not they were able to use their knowledge in the course of their daily occupation, they might get infinite pleasure and interest out of the study of fine examples of the work of past generations of carpenters. He believed, however, that they might look forward to far more than this pleasure. If he wanted a beautiful plaster vault or ceiling, or an artistic piece of metalwork, it might be far beyond his power to express on paper what he desired, but he knew of many men whom he could visit in their workshops and by discussion of models that they found there, by sketches, by consideration of odd photographs, and so forth, they might arrive at a mutual understanding of what was to be done, and he could leave the matter in their hands, knowing that what was done would be a delightful work of art, and that it would meet all the conditions of the case in a satisfactory way. Why should he not be able to find a worker in wood who would do the same thing for him. If he had, say, a few yards of old panelling to be used in a room and to be extended and altered to cover the whole surface of the walls, so that the architraves and pediments, the window linings and the parquetry, should be harmonious and suitable and that the room when finished should be a pleasure to all who came into it; so that if an inscription was to be cut anywhere the lettering should be well shaped and spaced and suitable in character to agree with all the rest? It ought to be quite possible. One of the most interesting things to him in the South Kensington Museum was an oak beam with a long motto carved on it in raised letters that might quite well be done by a clever joiner if he had some sense of beauty and had given some study to the artistic side of his craft.

His friend of whom he had spoken said that what a joiner should aim at acquiring was (*a*) a thorough knowledge of every detail of construction, including staircasing, dome and shaped roof work, etc.; and (*b*) an artistic knowledge of style of all dates. And his friend added that more knowledge of construction and proper balance of design was gained by making working drawings of actual examples than by all the rules, photographs, or formulas yet printed. Now here he (the lecturer) agreed with him entirely, and his purpose in coming that evening was to show what there was near to hand in the square mile of the City lying immediately round that hall, or close about it, for study and profit. It must be mostly in joinery-work, because, since Crosby Hall was gone, there was little or nothing left in the way of artistic carpentry in the City.

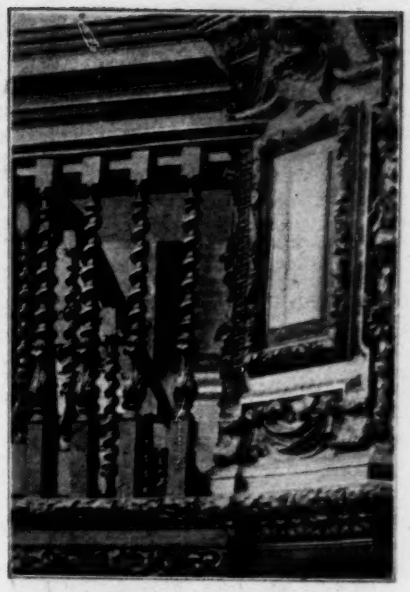
He recently came across an illustration of the old hall of the Trinity Brethren in Aldersgate-street, which showed the kind of work that used to be done previous to the Fire of London.

The hall of the Charter House showed the kind of roof that succeeded the fully-developed open timber roof.

For other open timber roofs built before the Fire of London they might go to Grays Inn, the Middle Temple Hall, or the Hall at Lambeth.

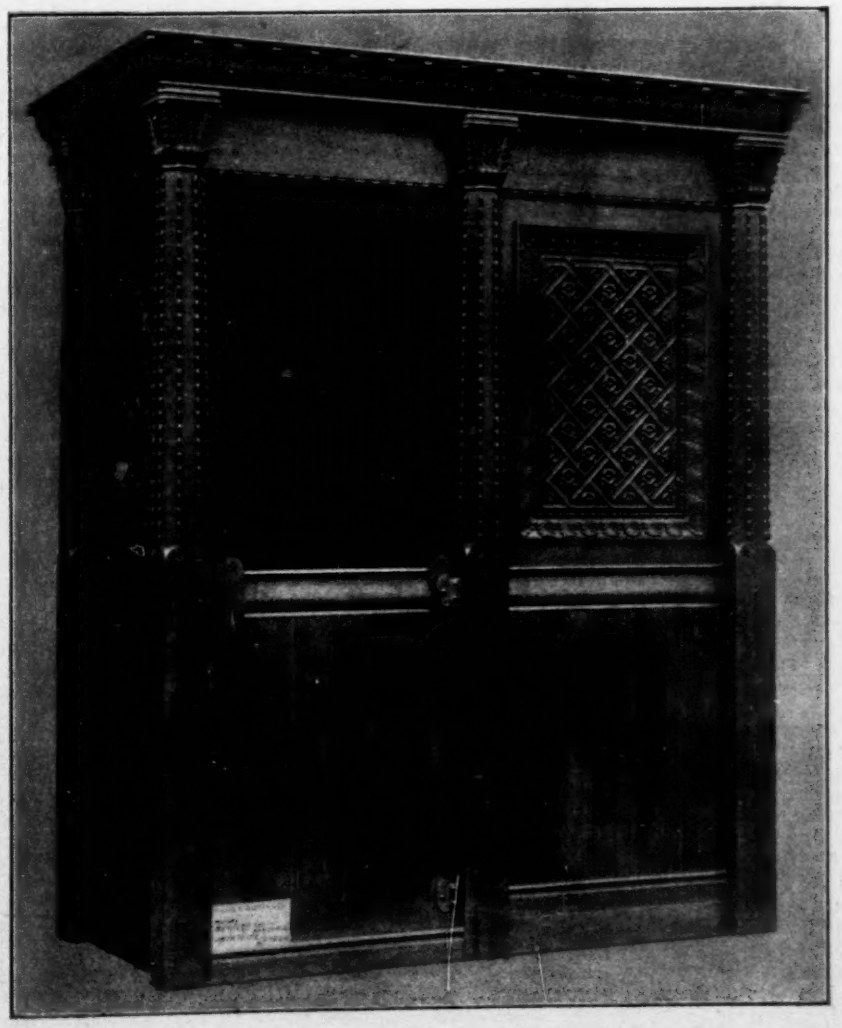
Carpentry as an artistic craft practically died with the advent of the English Renaissance under Inigo Jones and Wren. There were many churches built by Wren in this city, but not one of them had an open timber roof. So that in this respect he could not help them much, but many of these roofs in Wren's churches were marvels of scientific and workmanlike construction as carpentry pure and simple. Not even the tie beams were allowed to show inside the church, and yet these roofs were built successfully over fully-pitched vaulted ceilings and domes in a way that called for the warmest admiration and the most careful study. They might find drawings of many of them in Clayton's great book on the "Parish Churches of Sir Christopher Wren," published in 1849, but the roofs themselves were in existence for them to go to see and to measure and examine, and he would commend to all as a useful exercise to go and find out how the dome of St. Stephen's, Walbrook, was made, for it was only a few inches thick between the plaster inside and the lead outside from base to apex.

The lead-covered spires of many of these



**Christ's Church, Newgate-street.**

churches were remarkable pieces of timber construction. While the English Renaissance in the XVIIth century put an end to artistic carpentry, it gave a tremendous impulse to joinery, not only by the alteration of its character, but by giving it a more responsible position in the treatment of architectural interiors. They probably knew very well that in the time of Henry VIII. and Elizabeth English joinery work in staircases, mantel fronts, screens, and panelling reached a very high level of excellence, both as handiwork and as a matter of artistic handling. But it was accessory to architectural design rather than a part of it. The detail of it was small and complex, and it was used, as Professor Blomfield very correctly points out, in the manner of the tapestry and colour decoration of earlier times, although with admirable skill and truth.



**Confessional Box, Westminster. By Messrs. Bentley & Marshall.**
(Right Treatment of Woodwork.)

In the XVIIth century a marked change appeared; the panelling on walls received careful consideration as an element in the proportion of the building; doorways and screens presented well-marked architectural features, correct in section and proportion, according—as Benvenuto Cellini would have said—to the "rules of art." The organ became a regular adjunct of a church, and the case for it offered a remarkable opportunity for the exercise of the joiner's art. The wooden reredos became the accepted feature of the

**Doorway, Queenhithe.**

east end of a church. Church galleries became almost universal, and their fronts were another very interesting instance of skilful treatment in wood. Pews took the place of benches, and in many cases they were beautifully carved and panelled. At the same time staircases took on a very different method of treatment both in construction and design, and through the XVIIth and XVIIIth centuries they were important and beautiful features in the artistic treatment of houses and churches.

The lecturer then showed and described a large number of examples of woodwork from city halls, churches, etc.

## FIRE AND FIRE RISKS.

On the evening of the 2nd inst. a lecture was given in the Hall of the Company, London-wall, on "Fire and Fire Risks," by Professor Vivian Lewes, of the Royal Naval College. Lord Reay, G.C.S.I., G.C.I.E., presided.

Professor Lewes commenced his lecture by stating that the losses by fire in the British Empire amounted to 70,000,000*l.* annually, which was an absolute loss, because fire converted material which we required into gases useful only to Nature, and which Nature would probably soon utilise, and that even if the property were well insured the loss was still spread over the community, and so was a real loss. He then traced the history of the attempts made to discover what fire was and how the discovery of the composite character of air led to the revelation of the secret of combustion, and emphasised the more important facts by demonstrations with various combustible materials under different conditions. Proceeding, the lecturer said it was found that if air was excluded from a flame it went out, and then a test was made to discover which part of the air was necessary to combustion. The result was that oxygen was proved to be the necessary element, and a flame which, when put into nitrogen, went out was enormously increased when put into a vessel containing pure oxygen. Combustion was the manifestation of heat energy during an excessively rapid process of chemical combination. Under ordinary conditions of combustion it was necessary artificially to raise the temperature of a substance before it would burn, and the ignition point varied enormously in different substances. Phosphorus could be raised to the required temperature by hot water, but steel, although it would burn, requires a temperature far above any ordinarily used, and was therefore generally regarded as incombustible. In a fine division, a subject would undergo combustion which in a mass could not be heated to the required point. To illustrate this fact Professor Lewes burnt spirits of wine in a vessel, and then dropped particles of gunpowder (the ignition point of which is 250 deg. C.) into it. They passed through without burning, and some little time elapsed before they were raised to a sufficient heat and burned. Iron filings, however (the ignition point of which is 1,500 deg. C.), were burnt immediately on reaching the flame, their fineness allowing them to reach ignition point at once.

In considering the process of slow combustion Professor Lewes said that if you had material subject to slow combustion, surrounded by sufficient insulating material, it would nurse its own heat until it reached the proper temperature when rapid combustion would arise, and this was called spontaneous ignition. Cotton waste, after being used for taking up oil, would on a hot day reach this point in twelve hours, and every warehouseman knew the danger of storing large quantities of cotton, jute, and other substances containing vegetable juices if they were at all wet. Slow combustion, under the name of decay, would consume a fallen tree in ten, fifteen, or twenty years, and the tree during this process would give off exactly the same amount of heat as if it had been burnt.

When fire risks were considered it was found that those forces which most easily give out fire under normal and useful conditions are also those most likely to cause fire when undesired. The match easily led the way, and caused more fires than anything else. If badly packed they were likely to fire when thrown down. Defective flues and fireplaces were also serious fire risks. In old buildings it was frequently found that a beam was brought through a flue. It was intended to be beyond risk of fire, but was not, and after getting gradually charred would burst into flame. In many flues in new houses the brickwork inside the flue was quite different to that outside. There were little odd bits of brick used with masses of mortar—more mortar than brick. As the heat spread the mortar fell away, and a timber became exposed to the fire. The changing of fireplaces also gave rise to danger. A new grate, perhaps of excellent form, was to be put in, and the old hearthstone, which was well bedded in concrete, was removed. The necessity of getting 5 in. or 6 in. of insulating material between the stone and the joists below was overlooked, and a great risk of fire was incurred. There was also risk with all illuminants, especially when a lamp with a glass container was used. The general use of petrol had brought about another grave risk. It had the power of volatilising with the greatest possible ease, and escaped freely from bolts and screws. The vapour was very heavy, and when filling up tanks, there was always a risk of it running down the paving and reaching a light some distance away.

## SOUTHPORT SCHOOL COMPETITION.

THE recent limited competition for new elementary Council schools at Churchtown, Southport, has now been decided. Twenty-seven designs were submitted by local architects, and were adjudicated upon by Mr. G. E. T. Laurence, A.R.I.B.A., of London, whose award is as follows:—First premium (merged), 50*l.*, Messrs. Finchett & Lancaster, of Southport and Liverpool; second premium, 25*l.*, Mr. Drewitt; third premium, 10*l.*, Messrs. Henry Jones & Son.

The Committee's requirements were (1) a mixed school, with central hall, for 600 scholars in twelve classrooms; (2) an infants' department for 120, with a drill corridor 12 ft. wide; (3) a centre, to contain cookery, laundry, drawing, manual instruction, and dining-rooms; (4) a caretaker's cottage. It was at first stated that the centre and cottage were to be in one detached block, but this was afterwards made optional.

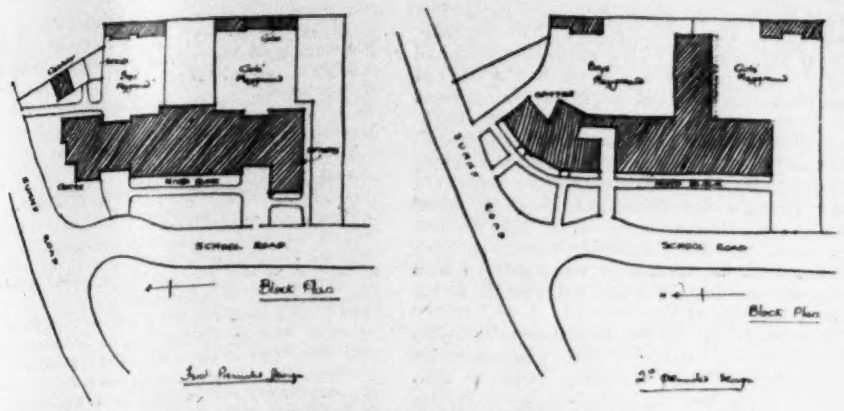
The position of the centre and the placing of the buildings on the site so as to leave well-shaped playgrounds were evidently the chief considerations, and the premiated designs owe their position to the manner in which these two points are treated. The site is not a difficult one to deal with, except that, as it lies with its ends north and south, it is impossible to give a south aspect to more than a few of the classrooms. The cost was limited to 10*l.* per head for the school, excluding the special rooms and cottage—quite a fair allowance for this district.

Elementary school competitions are specially interesting at this juncture owing to the disfavour with which the Board of Education has begun to regard the type of plan which has become stereotyped, of a hall surrounded by classrooms opening directly from it. Now, if ever, is the opportunity for some new type of plan to be evolved; but in this competition it must be confessed that the success attending the devices adopted by the competitors is in inverse ratio to the originality displayed. Two types are followed by most of the competitors, and both are already quite familiar—that adopted by the winner, where the hall and classrooms all open from either side of a long through corridor, and that followed by several competitors of a hall placed right across the main corridor, and cutting the school into two. This form answers best when the school is definitely divided into two sections, boys and girls, or seniors and juniors. Other attempts are bizarre, but unconvincing, and a few competitors still hold fealty to the "supervision" plan, and, ignoring the Board's change of front, boldly range their classrooms round their halls.

The 1st premiated design, while certainly the best all-round scheme submitted, does not stand head and shoulders above some of the others. The general arrangement is very good. Disregarding the Committee's recommendation of a detached centre, the authors attach it to the north end of the main block, where it is very convenient for evening classes. It is unfortunate, but unavoidable with this arrangement, that to reach it the girls have to cross the boys' entrance hall, while the separate cloakrooms provided are absurdly small. The shape and arrangement of the playgrounds is good. The mixed school is a piece of straightforward planning, especially in the way the hall and classrooms are fitted in, but there are lapses in the arrangement of the cloakrooms and entrances. The cloakroom, of all places, should be well lighted, and should have a good circulation of air, but in this design they are 30 ft. long, and only 8 ft. 6 in. in height, and the sole light comes from one end. The entrances are very well placed, but the vestibules are long and narrow. The infants' department is excellent, and all its classrooms have south light. It is very surprising, however, to read in the authors' report that the best aspect has been given to the various rooms, when eight of the




**Southport School Competition. First Premiated Design.**




**Southport School Competition.**

twelve classrooms face west, and would receive no sunlight until late in the afternoon, when the level rays are dazzling. There seems no reason why the central part of the plan should not be turned right over and the eight classrooms made to face east, when they would be scoured out by those invincible germ killers the sun's rays early in the day. The authors seem to be in some doubt upon this point themselves, as they have sent in a complete alternative scheme showing this arrangement, but this second plan is inferior in other respects. The authors estimate the cost of their design at 10,000*l.*, the foundations being cubed at 3d. per foot, and the superstructure at 6d.

The second premiated design doubtless owes its selection to its good block plan, much ingenuity being shown in the placing of the centre at the corner of the site; but in the details of the planning it is inferior to many others submitted. In the up-to-date plan much "cutting off" is indulged in, but it is unusual to so effectually disconnect the headmaster as to place his room off an outer vestibule. Although they overlook the playgrounds, the assistant teachers' rooms are stowed away in distant corners of the first floor, so that adequate internal supervision would be next to impossible. The infants' entrance is hidden away at the back of the school. The elevations are among the best in the room.

The authors of the third design have placed the majority of their classrooms to the east rather than to the west, but in other respects the plans hardly merit their place. There is a directness about the planning of the mixed block almost amounting to crudity, while the approaches to the rooms in the centre are tortuous and narrow.

The general level of the other plans is fair. Among them is one submitted by Mr. G. E. Tonge, whose main block is the best piece of planning in the room. There is a marked thoroughness in both details and general arrangement to which none of the other competitors have risen. The scheme is unfortunately ruled out of court by the unfortunate position of the centre, at the very back of the site.

Messrs. Hardman & Packer have made a plucky attempt to get south and east light to most of their classrooms, but have involved themselves in other difficulties. The infants' rooms should certainly have been south. Messrs. Langman and Corkrell's is a very workable plan, and by far the best elevations sent in, and they have exhausted most of the possibilities of the site in the three block plans they submit.

It is a commonplace that in school design plan comes first. But after a competition such as this, one wonders why elevation comes so poor a second. If half the competitors had applied the simplicity which they show in their planning to their elevations, or if they meant anything by expression that is inevitable in their reports, that "the elevations rely for their effect, not on ornament, but on breadth and good proportion," the exhibition would be more encouraging. The first premiated design has flat gables to every classroom, the triangles of the pediments are filled in with plaster, there is an embattled tower of the type that usually distinguishes a Salvation Army citadel, and one looks in vain for good proportion. Yet few plans are better adapted for real simplicity and breadth of treatment than this one.

## COMPETITION NEWS.

### Penrith Grammar School Competition.

The three premiums offered by the Governors have been awarded as follows:—First, Messrs. Harrison & Ash, Pilgrim-street, Newcastle; second, Mr. W. Peel Schofield, 15, Park-row, Leeds; third, Messrs. Halliday & Paterson, 14, John Dalton-street, Manchester. All the plans sent in for competition will be on view to competitors at Bishop Yards, Penrith, from Tuesday till Friday, March 14 to 17, between the hours of ten and four.

### Marylebone Town Hall.

The Town Hall Committee of the Marylebone Borough Council report that they have given much consideration to the practice generally adopted by other local authorities in the selection of designs for their public buildings. Two methods are open to the Council:—(*a*) To invite architects in open competition to submit designs; (*b*) to ask a few selected architects to submit designs. If (*a*) is adopted, it will be necessary (if members of the Royal Institute of British Architects are to compete) to hold the competition under the rules laid down by that Institute. If (*b*) is adopted, the competition need not be subjected to such rules. In view, however, of the difficulty of selecting architects if (*b*) were resolved upon, the Committee think that the first method should be adopted, and an open competition held. The rules of the Institute of British Architects provide that an assessor or assessors shall be appointed to be nominated by the President of the Institute of British Architects. The assessor also draws up and advises on the conditions and regulations under which the competition is held. When the assessor is appointed, his decision as to which of the designs is to be placed first is final, and the author of that design is to be the architect of the building. It is the practice of the President of the Institute to nominate one assessor only, but the Committee considered that the Council might wish to choose the assessor themselves, and the Committee also thought that the Council would wish to have the final choice of the designs submitted. This was, of course, contrary to the rules of the Institute, but, after some correspondence, the Chairman of the Committee (Mr. E. T. Fowler) and the Mayor interviewed the President, who has finally offered to nominate three gentlemen as assessors, from whom one may be chosen as the assessor, and has also agreed that two members of the Committee should be associated with the assessor in the selection of the designs, so that, although the final selection of the design would remain with the assessor, the view of the Committee would be taken into consideration by him before such selection is made. The assessor will also generally advise the Committee on the whole matter. The Chairman of the Committee and Alderman E. R. Debenham are to be appointed to confer and consult with the assessor as mentioned.

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held at the County Hall, Spring-gardens, S.W., on Tuesday. Mr. Whitaker Thompson, the Chairman, presided.

LOANS.—Sanction was given to the Bermondsey Borough Council to borrow 5,000*l.* for work in connexion with their electricity undertaking, and to the Lambeth Borough Council 6,000*l.* for paving works.

WILSON'S GRAMMAR SCHOOL, DULWICH.—On the recommendation of the Education Committee it was agreed that, subject to the condition that the Governors undertake to proceed forthwith with the preparation of detailed plans and specifications for the improvement of the school buildings in accordance with the preliminary sketch plans approved by the Council, a building grant of 1,700*l.* be made to the Governors of Wilson's Grammar School for the acquisition of the leasehold interests of certain property adjoining the present school buildings.

PRIZES FOR ARCHITECTURAL AND MUSEUM STUDIES.—The Education Committee reported as follows:—

"The Council offers each year one prize of 10*l.* and two prizes of 5*l.* each for sets of carefully-executed drawings of buildings, churches, and artistic objects in museums. The drawings for which the prizes are awarded become the absolute property of the Council. The work must have been executed previous to Easter, 1910, and must not have been submitted in another competition. Notices were inserted in the *London County Council Gazette*, and copies of handbills were sent to the schools of art, polytechnics, and technical institutes with reference to the award of the prizes for 1911. Fifteen students competed, and the works submitted by them have been examined. One of the two candidates recommended for a prize of 5*l.* was awarded a similar prize in 1910; she has therefore been regarded as ineligible. The examiner reports that the rest of the drawings are not of sufficiently high standard to warrant the second 5*l.* prize being given to any other candidate. Prizes, therefore, of 10*l.* and 5*l.* have been awarded to George C. L. Underwood and Mary Gilbertson, respectively, subject, however, in the former case to the following recommendation being approved. Regulation No. 870 (*a*) with regard to the education service provides that applicants for these awards should be students in schools or institutes which are maintained or aided by the Council. In 1910 a number of the Council's art scholarship holders were sent to the Royal College of Art, an institution not aided by the Council. We think it desirable that the regulations should be altered to include the Council's scholars, whether attending aided or non-aided institutions, and we therefore propose that the existing regulation should be amended."

A resolution giving effect to this suggestion was carried.

MEMORIAL TABLETS.—The Local Government, Records, and Museums Committee reported that they had considered a suggestion made by Mr. Andrew T. Taylor that a tablet should be affixed to Canonbury Tower, commemorative of the residence there of Oliver Goldsmith. Careful investigation has shown that, although local historians and biographers mention Goldsmith's residence at Canonbury Tower, no evidence is obtainable in confirmation of the statements; and, in view of the fact that in similar cases only distinct and incontrovertible evidence of residence has been accepted, the Committee felt unable to take any action in the matter.

ALTERATIONS TO PLACES OF AMUSEMENT.—The Theatres and Music-Halls Committee reported that they had approved drawings of the following:—

Chelsea Palace of Varieties—provision of a permanent cinematograph chamber.

High-street and Cato-road, Clapham—proposed public hall—proposals for ventilating the hall in the basement and the hall on the ground floor.

Hamilton Hall, South-road, Forest-hill—proposed alterations.

128 and 130, Powis-street—provision of fire-resisting separation from the adjoining premises and of an additional entrance to the hall.

White City Exhibition (Coronation Exhibition, 1911)—arrangements of buildings Nos. 14 and 48, and amended arrangements of buildings Nos. 19, 23, and 24.

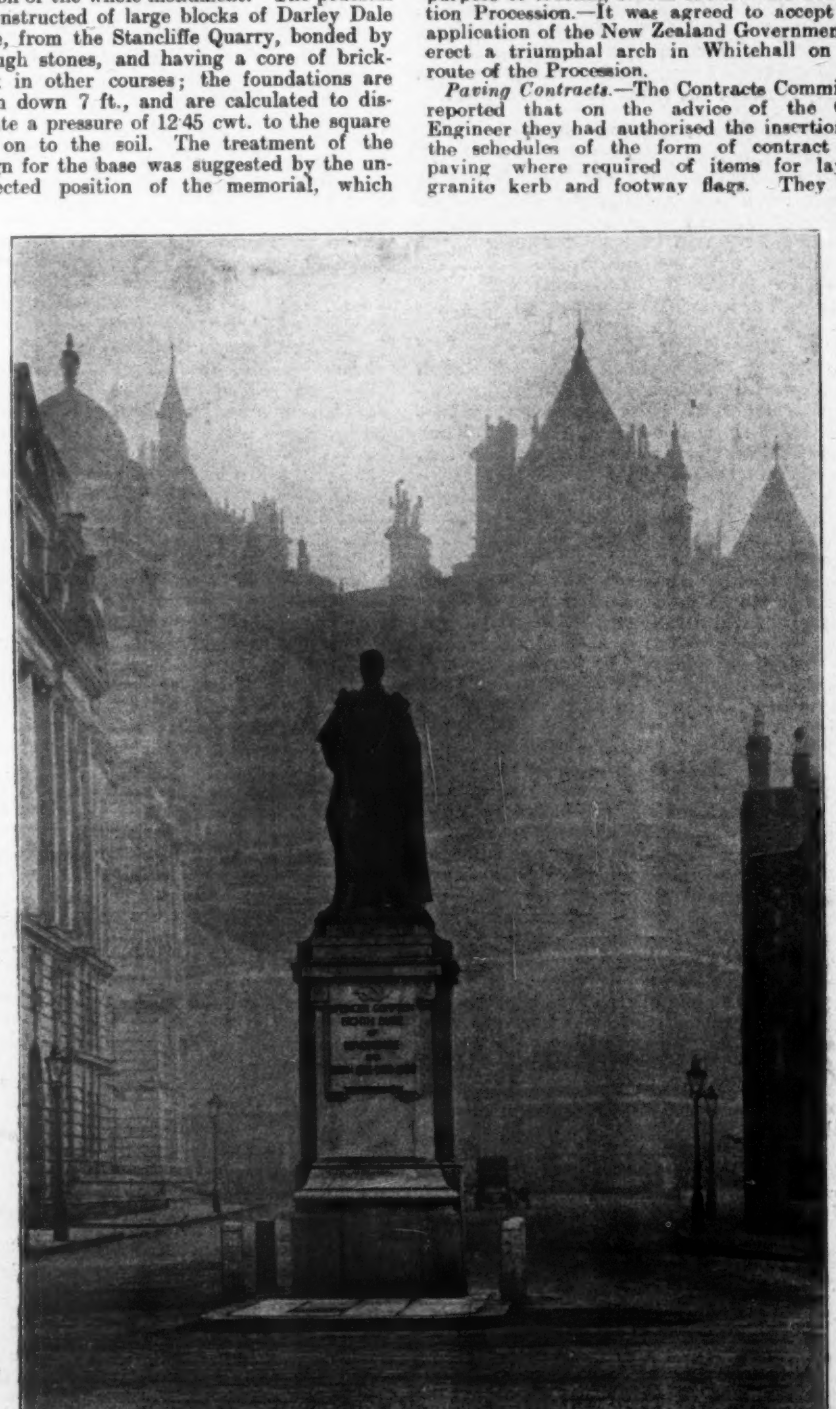
MINOR SCHOOL IMPROVEMENTS.—The Education Committee stated that they had considered schemes of minor improvements which they thought should be executed at twenty schools during the ensuing financial year. A

sum of 25,000*l.* has been included in the maintenance estimates, 1911-12, in respect of work of this nature. The estimated cost of the work now proposed is 11,794*l.*, making a total liability up to date of 17,128*l.* The Committee had sanctioned the necessary expenditure for the work at eleven schools. At the remaining nine schools the improvements are of an extensive character, each estimated to cost over 500*l.*, and to which the sanction of the Council is therefore required. The cases selected include the division of large class-rooms so as to form smaller rooms, the re-arrangement of the stepping so as to obtain left-hand lighting, with consequential alterations in the heating and lighting.

## THE DEVONSHIRE STATUE.

THE illustration on this page of the bronze memorial to the eighth Duke of Devonshire, to which we referred in our issue of February 17 (page 198), shows Mr. Herbert Hampton's statue in position at the western end of the Horse Guards' Avenue, Whitehall, where it makes an impressive feature. It is interesting to note that the sculptor sought the assistance of an architect in arranging the pedestal, and Mr. Howard Ince's work is a satisfactory completion of the whole monument. The pedestal is constructed of large blocks of Darley Dale stone, from the Stancliffe Quarry, bonded by through stones, and having a core of brickwork in other courses; the foundations are taken down 7 ft., and are calculated to distribute a pressure of 12·45 cwt. to the square foot on to the soil. The treatment of the design for the base was suggested by the unprotected position of the memorial, which stands in the midst of traffic on a very narrow island site. The resulting plan gives one solution of the problem of the spreading diagonal view. As fixed, the top stone had a curved plan, but this was cut back to the present re-entering angle, against the architect's wish. The entasis of the die is calculated to approximate very closely to that of a Classic pilaster; the treatment of the carved coat of arms is a resort to the earlier methods suitable for stone cutting, and breaks away from the modern treatment of the mantling, based on pen drawings by heralds, who have drifted into a convention of leaf foliage as a substitute for what is really a staff.

This latest addition to the statues of London takes high rank in artistic merit among similar memorials, and Mr. Hampton must be congratulated on the distinguished work he has produced to keep before the public the merits of a great statesman.



**Memorial in Whitehall to the 8th Duke of Devonshire.**
Bronze Statue by Mr. Herbert Hampton. Pedestal by Mr. Howard Ince.

## WESTMINSTER CITY COUNCIL.

AT the fortnightly sitting of this Council on March 2 the following matters were dealt with:—

*The Coronation.*—It was reported by Canon Henson that he had leased St. Margaret's Churchyard to Messrs. Trollope & Son for the purpose of erecting stands to view the Coronation Procession.—It was agreed to accept the application of the New Zealand Government to erect a triumphal arch in Whitehall on the route of the Procession.

*Paving Contracts.*—The Contracts Committee reported that on the advice of the City Engineer they had authorised the insertion in the schedules of the form of contract for paving where required of items for laying granite kerb and footway flags. They had also given directions that tenders for spruce-wood paving be not invited in connexion with the paving works to be executed during the ensuing financial year.

## LEGAL COLUMN.

### Water Supplied to Trade Premises.

The case of Metropolitan Water Board *v.* Colley's Patents, Ltd., upon which we commented in our issue, December 31, has already been considered by the Court of Appeal, and the majority of the Lords Justices forming that Court have reversed the decision delivered in the Courts below. The decision is of extreme importance, as it will lay an increased charge on those carrying on any trade or manufacture within the area served by the Metropolitan Water Board. The Court have reverted to the old test to be applied in the decision of such question, "What is the purpose to which the water is put?" quite apart from the nature of the premises and the purposes for which they are occupied. The result of the decision is that where, as in the case under discussion, the premises are occupied solely for business purposes, but sanitary and other conveniences are supplied for the use of the workpeople employed there, the occupiers of the premises are liable to be rated on the rateable value of the premises (subject in certain cases to the rebate allowed by sect. 9) for the water supplied for the above "domestic purposes" to the workpeople, and in addition to be charged by meter for the water supplied for direct trade purposes.

The history of this case is somewhat curious, and furnishes a commentary on the involved terms in which this Act—the Metropolitan Water Board Charges Act, 1907—is drawn. The County Court judge decided against the Water Board contention, the Divisional Court were divided equally in opinion, and thus the decision of the County Court judge stood undisturbed. The Appeal Court was devided in opinion, Lord Justice Vaughan-Williams affirming the decision in the County Court, Lords Justices Farwell and Kennedy over-ruling it. Moreover, as we pointed out in our former note, there are other cases in which some divergence of opinion has arisen in the Courts concerning the interpretation of this Act. It is to be hoped that the present case may be carried to the House of Lords for many reasons. In the first place, where statutory powers are conferred upon any authority which supplies a prime necessity of life those powers should be expressed in clear terms easy to be understood; secondly, the charges for a necessity of life should be as low as possible; and, lastly, they should be levied in such a manner as not to discourage sanitary and cleanly habits. If the decision of the Court of Appeal is to represent the law there is reason to fear that on premises used solely for trade or manufacture, lavatories for washing purposes may be withheld from the workpeople, and all conveniences be limited to those which are supplied by statutory obligation under such Acts as the Factory Acts. Where these Acts compel a supply for any domestic purpose, it is true that as the rate will have to be paid there will be no object in such economy; but there are numerous houses where trades are carried on on a small scale, where no statutory conveniences have to be supplied, and in such cases, in order to save the rate, sanitary conditions may be seriously prejudiced.

### Water Board's Stop-Cock Boxes.

In the recent case of Batt *v.* Metropolitan Water Board a new point appears to have been raised. The plaintiff had caught her foot in a stop-cock box and had fallen and sustained injuries, and was suing the Board for damages. The stop-cock in question was connected with the communication pipe to a private house, between the house and the main, and the County Court judge had given judgment for the defendants on the ground that sect. 8 of the Metropolitan Water Board (Charges) Act, 1907, was retrospective, and that the stop-cock box was the property of the owner or occupier of the house, and not of the Board. That section provides that "The Board shall, at the request of the owner or occupier of any house, . . . furnish to such owner or occupier or other person, by means of a communication pipe . . . and other necessary and proper apparatus to be provided, laid down, and maintained by him and at his cost, a sufficient supply of water for domestic purposes."

The Divisional Court held that this section was not retrospective, and that the stop-cock box having become a source of danger from want of repair, the defendants were liable.

In cases where this Act will apply—in the case of new houses—it seems surprising that

this section should have been approved by Parliament, as it places a burden on private owners which should certainly be included in the water rates, and it renders the private individual liable for plant laid in the public streets, to ascertain the condition of which requires expert knowledge.

This Act, however, is full of surprises, and has been the subject of continuous criticism. It remains to be seen whether these communication pipes are the subject of private property, and, if so, by what right they are laid in the public streets. The Water Board has statutory authority to lay pipes in the streets, but not so the private individual, who might be indicted for a nuisance.

### Building Line.

The case of London County Council *v.* Metropolitan Railway Company, which related to the building line in the Euston-road, and which has been the subject of so much litigation, has been carried to the House of Lords, and the judgments there delivered will be found reported in the current "Law Reports." The decision of the Court of Appeal will be found noted, the *Builder*, July 10 last. It will be remembered that the question involved was whether the old houses erected before 1662 constituted the building line or whether certain one-story shops erected, for the most part, with the consent of the Metropolitan Board or Works in front of the old buildings were to be taken into consideration. The superintending architect adopted the original line of buildings, the Tribunal of Appeal and the Divisional Court adopted the shops; but the Court of Appeal and now the House of Lords have affirmed the view taken by the superintending architect.

The Law Lords, in affirming the Court of Appeal, confined themselves to one point under the Metropolis Management Amendment Act, 1862, now repealed by the London Building Act, 1894. It was contended that the Metropolitan Board of Works, by consenting to the erection of so many of these one-story buildings, had, in fact, created a new building line, and had thereby lost the power of refusing to allow any other building to be built out to that line. The Law Lords negatived this contention on two grounds. Firstly, for the reason given by Lord Justice Farwell in the Court of Appeal, who said:—"It would be an extraordinary result if a public body entrusted with the duty of preserving not mere architectural uniformity, but sufficient areas of light and air for the general health and well-being, should, by consenting to the erection of projections of one story and no more in front of the line of buildings, be held to have thereby consented to the alteration of the line of buildings so as to authorise the erection of seven or eight story buildings." Secondly, the Lord Chancellor pointed out that such a contention would prevent the authority from even objecting to the erection of another one-story building with a view to securing an open space. The decision of the Court of Appeal on the effect of the provisions of the London Building Act, 1894, the House of Lords did not either approve or disapprove, as they held that the case was concluded by the reasons stated above, and also expressed in the Court of Appeal.

### A Decision under the Public Health Act, 1907.

We imagine that the decision recently given in the case of Carshalton Urban District Council *v.* Burrage by a judge of the Chancery Division is the first to be delivered under the Public Health Acts Amendment Act, 1907. Alongside one of the public highways vested in the Council was a strip of land some 295 ft. in length and varying from 15 to 43 ft. in width in the ownership of the defendant. On the further side of this strip of land was a chalk pit in other ownership. This pit was no longer being worked, but by reason of erosion and the action of the elements the defendant's land now forms part of the top of the pit. The Council had adopted the Public Health Acts Amendment Act, 1907, and, deeming this pit to form a danger to those using the highway, had called upon the defendant, under sect. 30, to fence his land on the side next the pit, and on his not complying with the notice fenced the land and were suing the defendant for the expenses incurred in erecting the fencing. The defendant contended that the pit was not his property, and in any case that he could not be liable, as the section applied to dangers to persons lawfully using the highway, whereas persons reaching the pit must first have strayed across his land intervening between the highway and the pit. The Court pointed out that the section did not only mention excavations "fronting, adjoining, or abutting" on a highway, but excavations "in any situation" fronting, adjoining, or abutting on a highway, and that these words extended the section to dangers, such as this chalk-pit, so approximate to the highway as to cause danger to those lawfully using it, and judgment was given for the Council.

The case affords one more illustration of the modern tendency to avoid using words of precision in legislation. This lack of precision facilitates hasty legislation, but involves the public in endless litigation before the intention of the statutes can be appreciated or ascertained.

### The London Building Acts.

In a recent case—London County Council *v.* Cannon Brewery Company, Ltd.—two points had to be considered under the London Building Acts Amendment Act, 1905. Proceedings were taken against the owners of a public-house for not having provided means of access in case of fire to the roof. The building in question was a corner house fronting Euston road and Chalton-street. The main building consisted of four stories over the basement, but the ground floor, which was used as a bar, projected 49 ft. beyond the main wall into the Euston-road. The first floor was divided into two sitting-rooms, and the two upper floors contained bedrooms occupied by the tenant, his wife, children, and servant, as well as by the public-house staff.

The sections of the Act dealing with this question are somewhat peculiar. In the first place, sect. 10, which has a marginal note "Projecting shops," provides that where any part of a building adapted to be used as a shop projects more than 7 ft. beyond the "main front" of any building, the projecting portion is to have a roof constructed of fire-resisting material. This section is only relevant to the case under consideration, because sect. 12, the section under which the proceedings were taken, provides "Every existing building to which the section of this Act whereof the marginal note is 'Projecting shops' applies, and every other existing building except a dwelling-house occupied as such by not more than two families, . . . shall, if having more than two stories above the ground story, . . . be provided by the owner with proper means of access to the roof."

The Court dismissed the information on two grounds—(1) The magistrate had found that the main front of the building was not in Euston-road into which the shop projected, but looking on to Chalton-street, and, therefore, this was not an existing building to which sect. 10, "Projecting shops," applied, and the Divisional Court held that there was evidence to support this finding. (2) As there was no subdivision into separate houses, no separate letting, and no separate establishment, the Court held the public-house staff not to constitute the building as occupied by more than two families under sect. 12.

## LONDON COUNCILS.

*Battersea.*—Price's Patent Candle Company, Ltd., have had plans passed for additions, to be used as a store, at Belmont Works, York-road.

*Bermondsey.*—Plans have been passed for Mr. J. A. Stayner, 205, Bermondsey-street, for the erection of a building at Tyers Gateway.

*Cheam.*—The Rural Council has accepted the tender of Messrs. A. G. Osenton, West Horsley, at 6,579*l.* 12s. 6d., for the new works of sewage disposal, etc.

*Chelsea.*—Plans have been passed for Messrs. Elms & Jupp for the erection of self-contained flats at Vale Court to abut on Mallord-street, Vale-avenue, and King's-road. The principal entrance will be in King's-road, and the block of dwellings when completed will form a continuous line of buildings along that thoroughfare, with a return front down Vale-avenue as far as Mallord-street. There will also be a block of buildings in Mallord-street, which will not be built up to those in Vale-avenue.

*Croydon.*—The following plans have been passed:—Mr. C. Spencer, twelve houses, Semley-road; Messrs. E. Evans & Son, twenty-three houses, Raymead-avenue; Mr. A. W. Dawson, four houses Zermatt-road; Mr. G. Poulton, seven houses, Ardfern-avenue; Mr. P. Crowley, ten houses, Shirley-road; Stroud Green House, Ltd., six houses, Blackhorse-lane; Mr. W. T. Curtis, seven houses, Dunbar-avenue; Messrs. H. J. & L. O. Linfoot, six houses, Tirlemont-road; Messrs. Chown & Sheffield, three houses Pollard's Hill North.

*Hackney.*—Plans have been passed for Mr. R. G. Bare, on behalf of Mrs. Medway, for the re-erection of Nos. 142 and 144, Lauriston-road to a new line of frontage.

*Hammersmith.*—The scheme approved in July last for providing a convenience at the Broadway is to be extended so that the cost will be 3,500*l.* instead of 2,500*l.* Consents of interested parties will have to be obtained.

*Ilford.*—Plans have been passed for Mr. E. T. Dunn for twelve houses, Gartmore-gardens, Green-lane; and for Mr. H. Carey for four houses, Cranbrook-road, Barkingside.

*Kensington.*—Improvements are to be carried out to the gas street lighting at an estimated cost for the conversion of burners of 3,700*l.* The London County Council is to be urged to take action for the abatement of the nuisance caused by the ventilating-shaft erected by them some years since on the Counter's Creek sewer near the railway bridge in Warwick-road.

*Leyton.*—The Surveyor is to prepare plans for the cooling tower pond and the foundation and trench work for the turbine set. Plans have been lodged as follows:—Mr. J. J. S. Naylor, three shops, High-road, Leytonstone; Mr. H. Coleman, electric theatre at 423 and 425, High-road, Leyton.

*Southgate.*—Plans are to be prepared by the Surveyor for making-up a portion of Cannon-road. Plans have been passed as follows:—Mr. J. Ives, four houses, Broomfield-lane, Palmer's Green; Mr. W. J. Payne, four houses, Elmwood-avenue; Mr. A. C. Turner, twenty-two houses, Kelvin-avenue, Bowes Park; Mr. T. E. Morgan, three houses, Green-lanes, Palmer's Green; Mr. R. May, Wesleyan Methodist Church, Green-lanes, Winchmore Hill; North Metropolitan Electric Power Supply Company, Ltd., transforming station, stores, offices, and caretaker's quarters, Queen's-avenue, Winchmore Hill.

*Stepney.*—160*l.* is to be spent in sewer reconstruction in Hanbury-street. Plans have been passed for Mr. J. M. Knight for the erection of a building at "Hough's Wharf," Northey-street, Limehouse.

*Wandsworth.*—The Finance Committee have passed estimates for 260*l.* for the erection of a women's convenience at Putney, and 325*l.* for a similar convenience at Clapham. The following plans have been passed:—Mr. F. Gadsdon, five houses, Fontaine-road, corner of Hilldown-road, Streatham; Messrs. Emden, Egan, & Co., additions to laundry, 74, Caistor-road, Balham; Messrs. J. Dorey & Co., Ltd., parish hall, Chillerton-road, Streatham; Messrs. Robertson & Barrie, twenty-five houses, Crowborough-road, Streatham.

*Watford.*—The Rural District Council has passed a plan lodged by Mr. W. R. Blackwell for alterations and additions to Wood Lodge, Oxhey.

*Wimbledon.*—The Borough Surveyor has been directed to prepare plans for additions and alterations to the Isolation Hospital. It is expected that the cost will be between 17,000*l.* and 20,000*l.* Plans have been passed as follows:—Messrs. T. W. Palmer & Co., motor garage, between 39 and 31, Russell-road; Messrs. W. & C. Brown, additions to factory in Ravensbury-road; Messrs. W. H. Gaze & Sons, additions to "Sidlaw," Southside, The Common. The following plans have been lodged:—Messrs. E. Evans & Sons, eight houses, Queen's-road; Messrs. Gale, Durlacher, & Emmett, four shops, Raynes Park terrace, Coombe-lane.

## OBITUARY.

### Mr. A. B. Cottam.

The death, on March 2, at Bushey, is announced of Mr. Arthur Basil Cottam, of Upcot, Bridgwater, aged forty-nine years. Mr. Cottam was principal of the firm of Messrs. Cottam & Samson, formerly Samson & Cottam, practising in Taunton and Bridgwater, and was elected an Associate of the Royal Institute of British Architects in 1883. In September, 1903, he was appointed to succeed Mr. C. H. Samson, F.R.I.B.A., as a Diocesan Surveyor for the diocese of Bath and Wells. Messrs. Samson & Cottam won the first premium in the competition, 1898, for Taunton Town Hall. Mr. Cottam made the plans and designs for the Art Schools, and for additions and improvements of the County School, Yeovil 1907; the restoration of the old churchhouse at Crowcombe, Somerset; Council Schools at Somerset Bridge and Frome; and of many houses and other buildings in Taunton, Bridgwater, and the West Country; the firm were the architects of the School of Art, Taunton, and, for the Somerset County Education Committee, of the Council Schools at Lyng, Langport, Tatworth, Ilminster, and the Mount, Bridgwater; of the schools at Ashcott, Midsomer Norton, Huntspill, near Bristol, and Highbridge; the restoration, with rebuilding of the upper portion of the tower and belfry, of Lyng Church, 1904-5; the new Church of the Holy Virgin, with priest's house, at Churchill, near Weston-super-Mare, designed after the XIIIth-century style freely treated, eleven years ago; the new buildings for Bishop Fox's Girls' School, Taunton; and reparation of the churches at Soraxton and Norton Malreward. Amongst Mr. Cottam's

recent work are the Council Schools and the Institute, at Burnham, and the County Territorial Hall, Old Taunton.

### Mr. Vaughan.

Mr. Cedric Vaughan, member of the Institution of Civil Engineers, the Institute of Mining Engineers, and the Iron and Steel Institute, died on February 21 at his residence, Leyfield, Millom, Cumberland, aged seventy years. He was the son of Mr. George Vaughan, of Snibstone Grange, Ashby-de-la-Zouch, and proceeded to Edinburgh University from Repton School. Having served his articles to Robert Stephenson, he joined the engineering staff of the Midland Railway, and became locomotive manager for the company's Derby lines. During the last forty years he was manager of Hodbarrow Mines, and five years ago he was elected Chairman of the Hodbarrow Mining Company.

## FOREIGN AND COLONIAL.

### Warehouse, Antwerp.

H.M. Consul-General at Antwerp (Sir E. C. Hertslet) reports that tenders are invited by the municipal authorities of that city for the construction of a minerals warehouse on the East Quay of the Bassin Asia. The estimated value of the contract is 47,700 frs. (about 1,900*l.*). A deposit of 2,500 frs. (100*l.*) will be required with each tender. Tenders must be sent in sealed envelopes to the Burgomaster, Hôtel-de-Ville, Antwerp, to arrive not later than March 23. The *cahier des charges* may be obtained (price 1 fr.) at the Hôtel-de-Ville, Antwerp. A copy may be seen by British contractors at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

### Railway up Table Mountain.

The Imperial Trade Correspondent at Capetown (Mr. E. J. Cattell) reports that the Joint Committee of the Capetown City Council have considered and reported in favour of a proposal for the construction of a railway up Table Mountain, and the establishment of an hotel on the mountain.

### Municipal Works, Hungary.

With reference to the notice on page 516 of the *Board of Trade Journal* of December 15, 1910, relative to the proposed execution of certain municipal works in Szeged (Hungary) in 1911, the *Zentral-Anzeiger* of February 19 notifies that the municipal authorities of Szeged have decided to expend 8,000,000 kronen (333,000*l.*) for the carrving out of a comprehensive scheme of public works, of which the following are the more important:—The erection of schools, barracks, a railway-station, a market hall, a municipal building, and a hospital; also paving, asphalting, and general road improvements.

### Building in Servia.

The *Oesterreichischer Zentral-Anzeiger* (Vienna) of February 19 notifies that the Servian Academy of Science and Arts have decided to begin work on the erection of a new building in the spring. The cost of the enterprise is estimated at 1,500,000 dinars (60,000*l.*).

## TRADE CATALOGUES.

Messrs. Ashwell & Nesbit, Ltd., of Leicester, London, Manchester, and Glasgow, send us a booklet dealing with their "Nutomatic" system of temperature control. Put briefly, the "Nutomatic" system provides a means of heating, by low-pressure steam, or hot water, which is capable of control by the atmospheric condition of the apartment under treatment. The "Nuvacuumette" system introduced by this firm is sufficiently well known to render its description here superfluous. The "Nutomatic" system has already been extensively adopted. It is particularly suitable for hospitals and hotels, where the maintenance of an equable temperature is especially desirable.

Messrs. Aldous & Campbell, of 21, Lower Bland-street, London, S.E., send us a useful series of "blotters," incidentally reminding the user that if his lift or crane is out of order, Messrs. Aldous & Campbell will set it right. This firm supply lifts of every description—electric push-button-control passenger lifts, electric goods lifts and service lifts, and hydraulic passenger and goods lifts. A special feature is made of the inspection and maintenance department, a matter of the first importance in the care of passenger lifts.

We have received from the International Time Recording Company, of 151-155, City-road, London, E.C., a booklet illustrating the varied and extensive uses of the Bundy, International, and Rochester Automatic Time Recorders. Among many other users of the "International" system of time recording, we note the Royal Arsenal, Woolwich; the Great Northern Railway; the Ritz Hotel, London; and the Liverpool Corporation. The advantages of a system of automatic time-keeping are obvious, and especially so in these days of keen competition and none too plentiful business, when the wastage of the employee's time means the wastage of his employer's money.

Messrs. Wm. Whitford & Co., constructional engineers, of the Royal Iron Works, Burford Wharf, Stratford, E., send us a leaflet illustrating the different varieties of steel constructional work executed by them. This firm make a speciality of domes and curved work, steel roof principals of all types and spans, bridges, fire-escape staircases, etc.

Messrs. Smart & Brown, engineers, of Erith, Kent, forward us particulars of the "S. and B." motor winch. The smallest size is suitable for lifting a load of 5 cwt. at 120 ft. per minute. The winch is actuated by a single-cylinder motor, worked with either petrol or paraffin. So compact a hoist should prove of great utility in the building trade. It is claimed that the "S. and B." winch can be driven by the most inexperienced person in a few hours, at most.

Messrs. Walter Carson & Sons have been good enough to forward us a sample tin of their new "Coverino" white undercoating. From a trial of the sample sent for notice, we can confidently recommend it as equal to the best of this class of goods, ensuing, as it does, a great saving in time, and, consequently, in money. It requires to be thinned with turpentine only, dries hard, and can be followed up with the finishing coat in a few hours.

Messrs. W. & N. Froy, builders' merchants and manufacturers, Brunswick Works, Hammersmith, send us illustrations of their new showrooms, the rebuilding of which they have just completed, after the disastrous fire which must still be fresh in the minds of most of our readers. The new premises are calculated to display to the best advantage the wide range of goods manufactured by the firm. The extent of Messrs. Froy's activities may be gauged by the fact that they have just completed a large stained glass church window at Wendover.

Messrs. Essex & Co., Ltd., of 114-116, Victoria-street, Westminster, send us patterns of their well-known Westminster wall papers and friezes. The beauty of tone and texture in their silk-fibre papers would be hard to rival. The same firm draw our attention to their varnishes and enamels and decorators' sundries, among which we may specially recommend to the notice of our readers the tried merits of "Sèvres" enamel, which is suitable for both inside and outside use, and has been selected for use by many members of the architectural profession. Another of the firm's specialities is "Metloid," an embossed substitute for tiles.

We have received from Messrs. A. Dreyfus & Co., of 15 and 16, Featherstone-street, London, E.C., a booklet drawing our attention to Tabard's Patent Imperishable Metallic Stone, for which this firm are the sole agents. We may mention that the metallic stone cement, invented by M. Tabard nearly fifty years ago, is adopted by the French Government and the Municipality of Paris for the restoration of their monuments. In restoration work it is often injudicious to jeopardise the stability of a building by taking out blocks of stone; in such cases the use of an artificial stone or cement that will really look like stone is to be preferred, and it must not be forgotten that this latter expedient is always the cheaper. Messrs. Dreyfus have restored a large number of buildings in this country within the last twenty-six years, including St. Peter's, Eaton-square; St. Mary, Aldermanbury; and the Army and Navy Club, Pall Mall. In France the preparation has been used in the restoration of the Cathedrals of St. Denis, Rheims, and St. Omer; the Invalides, the Porte St. Denis, and many other national monuments.

## PATENTS.

APPLICATIONS PUBLISHED.*

4,117 of 1910.—James Kay and Thomas Wilson Strang: Apparatus for heating air in connexion with the heating and ventilating of buildings.

5,155 of 1910.—Ernst Zehrlaut and Dr. Heribert Zehrlaut: Process of manufacturing artificial marble from self-hardening hydraulic mortars.

8,431 of 1910.—John Stevens: Metallic sheet material, applicable as a covering for floors, stair-treads, stair-nosings, or other surfaces.

10,886 of 1910.—Charles Frederick Burley: Roofing tiles.

10,976 of 1910.—Frederick James Hughes: Lead lights, stained glass windows, and the like.

11,167 of 1910.—Nicolai Frederick Mohl: Construction of conical chimneys, columns, or the like of reinforced concrete.

11,522 of 1910.—Francis Ellison Midgley: Window-sash fastenings and the like.

11,918 of 1910.—Joseph Alexander Hinsley: Method of and means for hanging and securing sliding windows in their frames.

15,713 of 1910.—Emile Sucher: Processes for hardening and preserving wood.

20,466 of 1910.—Melville Graham Clayton: Chimney-pot or ventilator-cowl.

23,143 of 1910.—James Godfrey Wilson: Fireproof structures.

24,235 of 1910.—John Mitchell: Blocks for reinforced buildings.

24,771 of 1910.—Henry Booth Naylor: Apparatus for use in the construction of scaffolding.

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

## SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

February 23.—By EDWIN EVANS & SONS (at Clapham Junction).

| | |
|---|---|
| Balham.—13, 15, and 17, Culmore-rd., and 12, Station-rd., u.t. 52¾ yrs., g.r. 7l., gross rental 170l. 10s. | 1,900 |
| Merton.—Park-rd., plot of land, f. | 175 |
| Norbury.—51, Norbury Court-rd., u.t. 90 yrs., g.r. 7l. 15s., y.r. 36l. | 250 |

February 27.—By ELLIOTT, SON, & BOYTON.

| | |
|---|---|
| St. John's Wood.—St. John's Wood-ter., f.g.r. 71., reversion in 64 yrs. | 170 |
| 94, St. John's Wood-ter. (s.), f., y.r. 36l. 10s., | 600 |
| Shepherd's Bush.—Godolphin-rd., f.g. rents 262l., reversion in 42¾ and 53¾ yrs. | 5,400 |
| Ealing.—Somerset-rd., f.g. rents 82l. 3s., reversion in 56¾ yrs. | 1,940 |
| Churchfield-rd., f.g. rents 58l. 16s., reversion in 56¾ yrs. | 1,700 |
| Churchfield-rd., f.g. rents 115l. 18s., reversion in 56¾ yrs. | 2,500 |
| Matlock-la., f.g. rents 50l. 14s., reversion in 56¾ yrs. | 1,185 |

By DAVID L. GOOCH & SON.

| | |
|---|---|
| Norwood.—Norfolk-gdns., f.g.r. 6l., reversion in 98¾ yrs. | 150 |

By HAMPTON & SONS.

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|---|---|
| Hampstead.—53, Belsize-rd., u.t. 33¾ yrs., g.r. 9l. 10s., p. | 245 |

February 28.—By CRAPTER & GREGORY.

| | |
|---|---|
| Forest Hill.—Lowther Hill, Ashdown, f., e.r. 48l. | 550 |
| Brockley Rise, plot of land, f. | 105 |

By CROFTS & Co.

| | |
|---|---|
| Tooting.—32, 34, Hereward-rd., f., w.r. 49l. 8s. | 400 |

By C. RAWLEY CROSS & Co.

| | |
|---|---|
| Paddington.—3, Torquay-st. and yard adjoining, f., p. | 720 |
| 16, Torquay-st., u.t. 43¼ yrs., g.r. 7l., y.r. 38l. | 250 |

By RUTLEY, SON, & VINE.

| | |
|---|---|
| Camden Town.—4 to 10 (even), Hampshire-st., u.t. 36 yrs., g.r. 21l., w.r. 156l. | 495 |
| Caledonian-road.—67 and 69, Winchester-st. (s.), u.t. 23 yrs., g.r. 16l., w.r. 98l. 16s. | 220 |
| Enfield.—191, Baker-st. (s.), f., y.r. 21l. | 320 |

By FREDERICK WARMAN.

| | |
|---|---|
| Highbury.—212 and 218, Blackstock-rd. (s.), f., y.r. 58l. | 600 |
| Holloway.—22 and 26, Hornsey-st., u.t. 46 yrs., g.r. 16l., w.r. 117l. | 300 |

March 1.—By H. DONALDSON & SONS.

| | |
|---|---|
| Stoke Newington.—5, Albion-gr., f., e.r. 38l. | 250 |
| 95 and 97, Prince George-rd., u.t. 82 yrs., g.r. 13l., y. and e.r. 56l. | 410 |
| Finsbury Park.—141, Lothair-rd., u.t. 66 yrs., g.r. 6l. 6s., y.r. 30l. | 225 |
| Islington.—20, Dorinda-st., f., w.r. 27l. 6s. | 235 |
| Hammersmith.—15, Mall-rd., u.t. 54 yrs., g.r. 7l., y.r. 40l. | 410 |
| Old Ford.—74a, 74, 76, and 78, Usher-rd., f., w.r. 106l. 12s. | 600 |
| Haggerston.—46, Whiston-st., f., w.r. 40l. 16s. | 250 |
| Hackney.—24 and 26, Brunswick-st., f., w.r. 70l. 4s. | 440 |

By WALTER HALL & SONS.

| | |
|---|---|
| Islington.—8, Ann-st., u.t. 16 yrs., g.r. 4l. 4s., p | 100 |

By RAWLINS, CULVER, & Co.

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|---|---|
| Brondesbury.—The Avenue, f.g.r. 12l. 12s., u.t. 63¼ yrs., g.r. 1l. | 180 |
| Muswell Hill.—Coppetts-rd., f.g. rents 23l. 10s., reversion in 89 yrs. | 360 |
| Coldfall-av., f.g. rents 28l., reversion in 89 yrs. | 600 |
| Wimbledon.—Queen's-rd., f.g. rents 40l., reversion in 90¼ yrs. | 949 |
| Chiswick.—St. Alban's-av., f.g. rents 78l. 10s., reversion in 89 and 90 yrs. | 1,822 |

By SKILTON & GOULDEN.

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|---|---|
| Canning Town.—250, Victoria Dock-rd. (s.), f., p. | 120 |

March 2.—By DUNCAN & KEMPTON.

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|---|---|
| Walthamstow.—105 to 115 (odd), Longtellow-rd., u.t. 84 yrs., g.r. 48l., w.r. 182l. | 300 |

By FAREBROTHER, ELLIS, & Co.

| | |
|---|---|
| Portman-square.—7, Montagu-st., u.t. 5 yrs., g.r. 40l., e.r. 200l. | 300 |
| West Kensington.—57, Edith-rd., u.t. 64½ yrs., g.r. 12l., y.r. 65l. | 440 |
| 3 and 5, Gunterstone-rd., u.t. 65¼ yrs., g.r. 21l., y.r. 100l. | 700 |
| 13, 17, 47, and 49, Talgarth-rd., u.t. 64¼ yrs., g.r. 41l., y. and e.r. 185l. | 1,015 |
| 53, Talgarth-rd., u.t. 64¼ yrs., g.r. 10l. 10s., y.r. 50l. | 290 |

SOME RECENT SALES—Continued on page 322.

# List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xviii.; Auction Sales, xxvi.

Certain conditions beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

## Competitions.

MARCH 15. — **San Salvador.** — SCHEME FOR A CITY THEATRE. — First premium, 8,000 francs; second, 4,000 francs. Particulars from Mr. M. J. Kelly, 8, Idol-lane, E.C.

* MARCH 21.—**Luton.**—SCHOOL.—The Luton Education Committee invite designs for new elementary school in Charles-street, Luton. See advertisement in this issue for further particulars.

MARCH 24. — **Swansea.** — CASTLE-STREET IMPROVEMENT.—The Swansea Corporation invite competitive designs and estimate for improvement of Castle-street. Two premiums are offered. See advertisement in issue of February 10 for further particulars.

MARCH 31.—**New Cumnock.**—The Deacons' Court invite plans for the erection of a new church, etc. See "Competition News" in issue of February 24.

MARCH 31. — **Romford.** — The Town Planning and Modern House and Cottage Exhibition invite designs for the general plan of Gidea Park, Squirrels Heath, Romford. For further particulars see advertisement in our issue of September 17, and of October 8.

MARCH 31.—**Trondhjem, Norway.**—PROPOSED HARBOUR AND RAILWAY EXTENSION.—Competitive designs for above are invited by the Joint Committee of the State Railways and the City Harbour Commissioners. See our issue of November 5, page 563, and that of October 15, page 444, for further information.

APRIL 1.—**Coventry.**—MUNICIPAL OFFICES.—The Coventry Corporation invite competitive designs for erection of Municipal offices and a Town Hall, to cost 50,000*l.* Premiums of 150*l.* (supplementary), 175*l.*, and 125*l.* Mr. E. Guy Dawber, F.R.I.B.A., has been appointed assessor. See article on page 686 and advertisement on page iv. in our issue of December 3. Also see advertisements in issues of November 19 and January 6 for further particulars.

APRIL 6. — **Carlton.** — SEWERAGE AND SEWAGE DISPOSAL SCHEME.—Information may be obtained from Mr. James Senior, the Clerk to the Parochial Committee, Carlton, near Barnsley.

APRIL 15.—**Havana.**—Project for a Presidential Palace. See "Competition News" in issue of November 26. Particulars may be obtained at the Cuban Legation, 3, Grosvenor-mansions, Victoria-street, S.W.

MAY 1. — **Manchester.** — LIBRARY AND ART GALLERY. — The Manchester Corporation invite designs for Library and Art Gallery upon the Piccadilly site. See advertisement in issue of January 13, and article in issue of January 20, and "Competition News" in issues of February 3 and 17.

* MAY 5. — **Swansea.** — CASTLE-STREET IMPROVEMENT.—The Swansea Corporation invite designs and estimates for the improvement of Castle-street. Premiums of 250*l.* and 50*l.* are offered. See advertisement in this issue for further particulars.

MAY 15.—**Chesterfield.**—The Standing Joint Committee for Derbyshire invite designs for the erection of a Court-house and lock-up, at a cost of 8,000*l.* Mr. Frank Baggallay, F.R.I.B.A., is appointed assessor. Open only to architects practising in the county. Particulars, 3*l.* 3*s.* deposit, from Mr. Geo. C. Copstick, L.R.I.B.A., County Offices, Derby.

JUNE 10. — **Aspatria, Cumberland.** — The U.D.C. invite engineers to submit plans for estimates of a scheme of sewerage. The surveyor will give particulars required.

AUGUST 15.—**Berne.**—Designs for the erection of a monument at Berne to celebrate the foundation of the International Telegraph Union. Conditions may be seen in the library of the Royal Institute of British Architects.

AUGUST 21.—**Athens.**—COURT OF JUSTICE.—An international competition is instituted by the Ministry of the Interior, for the erection of Court buildings, to cost 160,000*l.* The *Official Gazette* may be seen at the Library of the R.I.B.A.

NOVEMBER 1. — **City of St. Petersburg.** — MONUMENT TO ALEXANDER II.—Particulars in our issue of August 13, 1910.

DECEMBER 29. — **Glasgow.** — DESIGN FOR A BRIDGE.—Designs are invited (Alexander Thomminums of 60*l.* and 20*l.* are offered. See advertisement in issue of December 24 for further particulars.

NO DATE. — **Bradford.** — INFIRMARY. — The Board of Management of the Bradford Royal Infirmary invite competitive plans, with estimates, for the erection of a new infirmary on a site in Duckworth-lane. See advertisement in issue of December 31 for further particulars.

* NO DATE. — **Inverness.** — REMODELLING OF ASSEMBLY ROOMS.—The Stewards of the Northern Meeting invite designs for remodelling of the Northern Meeting Assembly Rooms in Inverness. See advertisement in this issue for further particulars.

NO DATE.—**Leicester.**—PROPOSED PUBLIC HALL.—The Corporation invite the practising architects of Leicester, having offices in the town, to supply plans, designs, and estimates for the construction of a new Public Hall, proposed to be erected on land adjoining the Victoria Park and Regent-street. Conditions of competition can be obtained on application, accompanied by a deposit of 1*l.* 1*s.*, being made to Mr. E. George Mawbey, M.Inst.C.E., Borough Surveyor, Town Hall, Leicester.

NO DATE. — **Lowestoft.** — SCHOOL. — The Lowestoft Education Committee invite designs for an elementary school. Premiums offered, 21*l.*, 10*l.* 10*s.*, and 5*l.* 5*s.* See advertisement in issue of February 10 for further particulars.

NO DATE.—**Southampton.**—NEW BUILDINGS.—The Council of Hartley University College invite designs for proposed new buildings. See advertisement in issue of January 6 for further particulars.

## Contracts.

### BUILDING.

*The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.*

MARCH 13. — **Coventry.** — GOVERNOR-HOUSE.—The Gas Committee invite tenders for building a new governor-house at the Gas-street Works. Drawings may be seen, and bill of quantities obtained, from Mr. Fletcher W. Stevenson, Engineer and General Manager, Gas-street, Coventry, on deposit of 1*l.* 1*s.*

MARCH 13.—**Maesteg.**—SHOP.—Rebuilding shop premises. Quantities from Mr. W. Beddoe Rees, architect, 3, Dumfries-place, Cardiff.

MARCH 13.—**Pembroke.**—TOWN HALL.—Alterations and repairs to Town Hall, Pembroke. Bills of quantities from Borough Surveyor, Municipal Offices, Pembroke Dock, on deposit of 1*l.* 1*s.*

MARCH 13. — **Southampton.**—SCHOOL.—Erection of school buildings, etc., in French-street. Plans and specification seen, and bills of quantities from Borough Engineer's Office, on deposit of 3*l.* 3*s.*

* MARCH 14. — **Bromley-by-Bow.**—PLASTERING.—The Managers of the Devons-road Sick Asylum invite tenders for certain plastering work. See advertisement in this issue for further particulars.

MARCH 14.—**New Cross, Aberystwyth.**—SCHOOLROOM.—At Horeb C.M. Chapel, New Cross. Quantities from Mr. Thomas Edwards, Gorsiasa, New Cross.

MARCH 14.—**New Tredegar.**—CHURCH—Reconstruction of Bethel Welsh Calvinistic Methodist Church, New Tredegar. Quantities from Messrs. Habershon, Fawckner, & Co., architects, 41, High-street, Newport. Deposit 1*l.* 1*s.*

MARCH 14.—**Sowerby Bridge.**—STORE.—The Sowerby Bridge Industrial Society invite tenders for erection of proposed store, Bolton Brow, Sowerby Bridge. Plans seen and quantities from offices of the Society, Carlton-street.

MARCH 15.—**Ballybay.**—SHOPS, ETC.—Erection of a block of shops and dwelling-houses. Plans and specifications from Mr. John F. M'Gahon, architect, 9, Exchange-buildings, Dundalk.

MARCH 15.—**Esh Winning.**—COTTAGES.—Erection of twenty cottages at Esh Winning. Quantities from Messrs. C. Johnson & Son, architects and surveyors, Cockton-hill, Bishop Auckland.

MARCH 15.—**Liverpool.**—BRIDGE.—Widening of the bridge. Quantities from Engineer's Office, Hunt's Bank, Manchester.

MARCH 15.—**Outlane.**—HOUSES.—Four dwelling-houses. Bills of quantities from Mr. J. Berry, architect and surveyor, 3, Market-place, Huddersfield.

MARCH 16.—**Belfast.**—SHOPS, ETC.—Erection of two shops, etc. Quantities from Messrs M'Carthy & Brookes, Scottish Provident-buildings, on deposit 1*l.*

MARCH 16.—**Carlton.**—FARMHOUSE.—Alteration and additions to farmhouse. Plans and specifications seen, and quantities, from Messrs. Thorp & Turner, architects and surveyors, Goole.

MARCH 16.—**Handsworth.**—SCHOOL.—Extension of the Rookery-road Junior School. Deposit of 2*l.* 2*s.* for quantities. Messrs. Wood & Kendrick, architects, High-street, West Bromwich.

* MARCH 16.—**London, E.**—DECORATING AND REPAIRS.—The St. George-in-the-East Guardians invite tenders for (1) repapering and decorating apartments at Plashet Schools, Upton Park, E.; (2) repointing and other repairs at Infirmary, Raine-street, Old Gravel-lane, S.E. See advertisement in this issue for further particulars.

MARCH 16.—**Meath.**—RESIDENCE.—Erection of a parochial residence at Moylough, near Oldcastle, Co. Meath. Plans, etc., from the Rev. R. Barry, P.P., Oldcastle.

MARCH 16.—**Prescot.**—STORES.—New general stores. Plans, etc., seen at the office of Mr. James Gandy, architect, Masonic-buildings, St. Helens, on deposit of 1*l.*

MARCH 17.—**Gravesend.**—ALTERATIONS.—Additions and repairs to No. 52, Queen-street, Gravesend. Plan, specification, etc., seen Borough Surveyor's Office.

MARCH 17.—**Hull.**—BATHS.—Reconstruction of the Madeley-street Baths. Apply City Engineer's Office.

MARCH 18. — **Trelewis.** — DWELLING-HOUSES.—Quantities from Mr. Trehearne Jones, architect and surveyor, Nelson, via Cardiff.

MARCH 18. — **Ynysddu, Tredegar, Pengam (Mon.).** — SCHOOL WORKS. — Bills of quantities obtained at the office of Mr. John Bain, F.R.I.B.A., C.C. Offices, Newport, on payment of a deposit of 1*l.* 1*s.*

MARCH 20.—**Burnley.**—NEW BUILDINGS.—Construction of new buildings at Barrack-road, Burnley. Bills of quantities from Mr. William Greenwood, A.R.I.B.A., architect and surveyor, Victoria-chambers, Victoria-street, Blackburn, on deposit of the sum of 1*l.* 1*s.*

MARCH 20. — **Castleblayney.** — COTTAGES.—The Great Northern Railway (Ireland) invite tenders for the erection of three gate cottages. The drawings, etc., seen at the Chief Engineer's Office, Amiens-street Terminus, Dublin. Quantities, on deposit of 10*s.*, from Mr. T. Morrison, Secretary, Secretary's Office, Amiens-street Terminus, Dublin.

MARCH 20.—**Clones.**—HALL.—Erection of new Catholic Hall in Clones. Plans, etc., from Mr. D. Gorman, Millbrook, Clones.

MARCH 20.—**Milborne Port.**—SCHOOL.—Erection of a new Council school. Quantities from Mr. A. J. Pictor, Bruton.

MARCH 20.—**Stoney Royd.**—MORTUARY, ETC.—Removal and rebuilding of the mortuary and disinfector-house. Apply Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax. Deposit 5*l.*

MARCH 21.—**Sychtyn.**—SHOP, ETC.—Erection of shop and warehouse. Plans and specifications, and information from Secretary, Mr. William E. Chambers, Violet Cottage, Sychtyn, near Northop.

* MARCH 23.—**Stockwell, S.W.**—LATHING AND SLATING ROOF.—The Lambeth B.C. invite tenders for lathing and slating a roof. See advertisement in this issue for further particulars.

* MARCH 27. — **Eastleigh.** — PARTITIONS AND VENTILATING FITTINGS. — The Southampton C.C. invite tenders for ventilating fittings and two folding partitions at Cranbury-road Girls' School, Eastleigh. See advertisement in this issue for further particulars.

* MARCH 28. — **Woking.** — ALTERATIONS.—The Commissioners of H.M. Works and Public Buildings invite tenders for alterations to Head Post-office, Woking. See advertisement in this issue for further particulars.

* APRIL 3.—**London, S.W.**—ADDITIONS, ETC.—The Territorial Force Association of the County of Surrey invite tenders for alterations and additions to existing drill-hall premises, St. George's-road, Wimbledon. See advertisement in this issue for further particulars.

* APRIL 4.—**Swindon.**—ENLARGEMENT OF POST-OFFICE.—The Commissioners of H.M. Works and Public Buildings invite tenders for enlargement of Head Post-office, Swindon. See advertisement in this issue for further particulars.

* APRIL 7. — **Chatham.** — SCHOOL.—The Kent Education Committee invite tenders for new county school at Chatham Hill. See advertisement in this issue for further particulars.

NO DATE.—**Bracknell.**—NEW OFFICES.—Apply Architect, Mr. Cecil H. Perkins, A.R.I.B.A., of Church-road, Bracknell. Deposit 1*l.* 1*s.*

NO DATE.—**Burslem, etc.**—ALTERATIONS, ETC.—(1) Alterations, etc., to Lower Lodge, Burslem Cemetery; (2) alterations, etc., to the Cocknage-road Lodge, Longton Park; (3) alterations, etc., to the gymnasium, Burslem; (4) painting the gymnasium, Burslem. Apply Mr. A. Burton, A.M.Inst.C.E., F.S.I., Borough Surveyor, Town Hall, Stoke-upon-Trent.

NO DATE.—**Cork.**—COTTAGES.—Tenders are invited for the erection of cottages in Blarney-street, Cork. Mr. Hugh W. Flanagin, B.E., B.A., architect, 2, South Mall, Cork.

NO DATE.—**Earlestown, Lancs.**—ASSEMBLY-HALL, ETC.—At Earl-street, Earlestown, Lancashire. Apply Messrs. Robert Curran & Son, Cairo-street, Warrington. Deposit of 1*l.* 1*s.*

## BUILDING—*continued.*

***The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.***

No DATE.—**Gateshead.**—DRILL-HALL.—Extensions and alterations to drill-hall premises. Deposit of 2*l.* 2s. for quantities, from Mr. Henry Chapman, A.R.I.B.A., 38, Grainger-street W., Newcastle-on-Tyne.

No DATE.—**Ipswich.**—LODGE.—Erection of a new lodge. Quantities supplied by Mr. J. S. Parmenter, Ipswich. Deposit 1*l.* 1s.

No DATE.—**Portbury.**—WALL.—Erection of boundary wall, paths, etc., for new churchyard. Plans from the Vicarage.

No DATE.—**Sheffield.**—NEW PREMISES.—Erection of new premises in Ecclesall-road, Sheffield. Quantities from Mr. H. L. Paterson, A.R.I.B.A., architect, 19, St. James's-street, Sheffield, on deposit of 10s.

No DATE.—**Warrington.**—SEATING.—Warrington I.L.P. invite tenders for seating accommodation for 100 people. Apply Secretary, I.L.P., Wilderspool-causeway.

## ENGINEERING, IRON, AND STEEL.

MARCH 20.—**Eccles.**—PLANT.—The Eccles Corporation invite tenders for plant required in connexion with their electricity undertaking. A copy of the general conditions, form of tender, etc., may be obtained from Mr. H. W. Angus, Borough Electrical Engineer, Electricity Works, Cawdor-street, Patricroft, Eccles, on payment of a deposit of 2*l.* 2s.

## FURNITURE, PAINTING, MATERIALS, etc.

MARCH 11.—**Manchester.**—LABORATORY FITTINGS.—Supply of laboratory fittings at the Municipal Secondary School, Whitworth-street, Manchester. Specifications from offices in Deansgate, Manchester, on deposit of 1*l.* 1s.

MARCH 13.—**Notting Hill.**—PAINTING, ETC.—St. Marylebone Board of Guardians invite tenders for painting, etc. Apply to the Steward of the Infirmary.

MARCH 14.—**Great Western Railway.**—PAINTING WORKS. — Cleaning and repainting station buildings, bridges, etc., for the Great Western Railway (twelve contracts). Quantities at the office of the Engineer at Wolverhampton for Contracts Nos. 1 to 5, at Taunton for Contracts Nos. 7 and 9, at Newport for Contracts Nos. 6 and 10, and at Shrewsbury for Contracts Nos. 11 and 12.

MARCH 14.—**London.**—PAINTING.—The Great Western Railway invite tenders for painting, etc., at Paddington Station. Plans, etc., may be seen, and bills of quantities obtained, from Engineer at 7, Eastbourne-terrace, Paddington, W.

MARCH 15.—**Stockport.**—PAINTING.—The Manorial Tolls Committee invite tenders for painting covered market. Specification and form of tender from Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Town Hall, Stockport.

MARCH 18.—**Greetland.**—ALTERATIONS.—Alteration of premises into stabling. Quantities from Messrs. Chas. F. L. Horsfall & Son, architects, Lord-street-chambers, Halifax.

* MARCH 22.—**London.**—WINDOW-CLEANING.—The Commissioners of H.M. Works, etc., invite tenders for window-cleaning in certain London districts. See advertisement in this issue for further particulars.

MARCH 23.—**London.**—ROOF.—The Lambeth B.C. invite tenders for lathing and slating a roof. Full particulars from office of the Borough Engineer, Mr. Henry Edwards, C.E., Lambeth Town Hall, Brixton-hill, S.W., on payment of deposit of 1*l.* 1s.

MARCH 24.—**London.**—WOOD-PAVING.—The Merton U.D.C. invite tenders for laying soft wood-paving, etc. Particulars, etc., from Mr. G. Jerram, A.M.Inst.C.E., Surveyor, District Council Offices, Kingston-road, Merton, S.W.

## ROADS, SANITARY, AND WATER WORKS.

MARCH 13.—**Billericay.**—GRANITE, ETC.—The R.D.C. invite tenders for the supply of Guernsey granite, etc. Apply Mr. F. E. Ennals, Shelley-road, Hutton.

MARCH 13.—**Bucklow.**—STONE, ETC.—Supply of Welsh setts, etc. Apply Mr. Joseph Burgess, Tabley, Knutsford.

MARCH 13.—**Hafodyrynys.**—SEWERAGE.—Construction of sewers. Quantities, on deposit of 1*l.* 1s., from Mr. John Williams, Council Offices, Abercarn, Mon.

MARCH 13.—**Morley.**—MATERIALS.—Supply of materials. Apply Mr. W. E. Putman, Assoc.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Morley.

MARCH 14.—**Stroud.**—GRANITE, ETC.—The U.D.C. invite tenders for the supply of granite, basalt, limestone, etc. Apply Mr. E. Northam Witchell, Clerk to the Council, 1, Lansdown, Stroud.

MARCH 15.—**Hendon.**—MATERIALS.—The R.D.C. invite tenders for the supply of broken granite, etc. Further particulars from Surveyor, Mr. J. A. Webb, Great Stanmore.

MARCH 15.—**Whitley.**—GRANITE, ETC.—Supply of granite, etc. Quantities from Mr. Joe Sharp, Clerk, 23, John William-street, Huddersfield.

MARCH 16.—**Lanchester.**—LIMESTONE, ETC.—The R.D.C. invite tenders for limestone, etc. Apply Mr. Wm. Cumming, Highway Surveyor, Surveyor's Office, Lanchester, Durham.

MARCH 17.—**London.**—PAVING.—The Westminster City Council invite tenders for paving work. Specification, schedule, and tender from Town Clerk's Office, Westminster City Hall, Charing Cross-road, W.C.

MARCH 18.—**Burnley.**—MATERIALS.—The Highways Committee invite tenders for the supply of setts, etc. Specifications from office of Mr. G. H. Pickles, M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Burnley.

MARCH 18.—**Hoyland.**—MATERIALS.—The U.D.C. invite tenders for the supply of road materials. Apply Mr. Frank Hewitt, Engineer and Surveyor, Town Hall, Hoyland, near Barnsley.

* MARCH 20.—**Chelmsford.**—TAR-PAVING.—The Chelmsford Education Committee invite tenders for making-up and tar-paving of playgrounds at Trinity-road Council School. See advertisement in this issue for further particulars.

MARCH 20.—**Renfrew.**—WATER SUPPLY.—Construction of additional water supply. Drawings of the works may be seen, and quantities, on deposit of 2*l.* 2s., from Messrs. W. R. Copland & Son, 146, West Regent-street, Glasgow.

MARCH 21.—**London.**—SEWER, ETC.—The London C.C. invite tenders for the construction of brick sewer. Bills of quantities from the Chief Engineer of the Council, Mr. Maurice Fitzmaurice, C.M.G., at the County Hall, Spring-gardens, S.W., upon payment of 10*l.* deposit.

MARCH 24.—**Brighton.**—GRANITE.—The Council invite tenders for broken granite. The specification from office of the Borough Surveyor at the Town Hall, Brighton.

MARCH 27.—**Maidstone.**—MATERIALS.—The U.D.C. invite tenders for the supply of road materials. Specifications, etc., from Borough Surveyor, Mr. T. F. Bunting, at the Fair Meadow, Maidstone.

* MARCH 27.—**Tooting.**—ROAD MAKING.—The Wandsworth Borough Council invite tenders for making-up and paving certain streets. See advertisement in this issue for further particulars.

MARCH 29.—**Walsall.**—MATERIALS.—The R.D.C. invite tenders for the supply of materials. Apply Mr. W. P. Young, District Surveyor, Council Offices, Rushall, Walsall.

No DATE.—**Barrow-in-Furness.**—DRAINAGE.—Wanted, tenders for land drainage, about 1,250 roods. Apply Messrs. W. Gradwell & Co., Ltd., contractors, Barrow-in-Furness.

# Public Appointments.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in |
|---|---|---|---|
| *SURVEYOR | Leathersellers' Company | 300*l.* per annum | Mar. 21 |
| *ASSISTANT IN SURVEYOR'S DEPARTMENT | Wanstead U.D.C. | 100*l.* per annum | Mar. 29 |

# Auction Sales.

| Nature and Place of Sale. | By whom Offered. | Date of Sale. |
|---|---|---|
| *BUILDERS MERCHANT'S STOCK—23, Moorfields, E.C. | Fryett, White, & Co. | Mar. 14 |
| *BUILDER'S STOCK AND PLANT, DALSTON, N.E.—On the Premises | H. W. Smith | Mar. 16 |
| *STOCK & MACHINERY, STEAM JOINERY WORKS, CLAPTON, N.E.—On the Premises | Joseph Hibbard & Son | Mar. 28 |
| *FREEHOLD BUILDING ESTATE, CHELMSFORD—At the Mart | Edwin Fox, Bousfield, Burnetts, & Baddeley | April 5 |

SOME RECENT SALES—*Continued from page* 320.

By FOSTER & CRANFIELD.

Reversion to one-sixth of 3,000*l.* Metropolitan 3 per cent. Stock, life aged 56 ..... £225
Contingent reversion to twelve forty-fifths of a fund, estimated value 8,800*l.*, lives aged 56, 48, and 52 ..... 800
Reversion to one-half of trust fund, estimated value 30,000*l.*, life aged 56 ..... 6,050
Reversion to three one-fourth shares of trust fund, estimated value 43,775*l.*, lives aged 79 and 63 ..... 16,500
Reversion to one thirty-sixth of 4,300*l.*, to one twenty-fourth of 13,500*l.*, and one-twelfth of 970*l.*, life aged 80 ..... 440
Reversion to one-eight of trust fund, estimated value 35,000*l.*, life aged 80 ..... 3,000
Two one-eighths of one-third of trust fund, producing 1,800*l.* p.a., subject to an annuity of 1,000*l.*, life aged 80 ..... 1,300
City Liberal Club.—500*l.*, 4 p.c. debenture ..... 500

By ROBSON & PERRIN.

New Southgate.—129, High-rd. (s.), u.t. 55 yrs., g.r. 10*l.*, y.r. 50*l.* ..... 550
Islington.—3 and 4, Rydon-st., u.t. 16 yrs., g.r. 8*l.* 8s., y.r. 60*l.* ..... 210
6, 7, and 8, Gordon-st., u.t. 15 yrs., g.r. 15*l.* 7s. 6d., w.r. 121*l.* 4s ..... 245

By STIMSON & SONS.

City-road.—1 to 5, Craven-st., u.t. 35¼ yrs., g.r. 55*l.*, w.r. 204*l.* 2s. ..... 145
Camberwell.—60, Grove-hill-rd., u.t. 65¼ yrs., g.r. 8*l.*, e.r. 40*l.* ..... 205
Enfield.—35, Gordon-hill, f., y.r. 24*l.* ..... 240
Bermondsey.—80 to 86 (even), Rolls-rd., and l.g.r. 9*l.*, u.t. 23 yrs., g.r. 15*l.*, w.r. 156*l.* ..... 520
Smyrks-rd., i.g. rents 66*l.* 10s., u.t. 10¼ yrs., g.r. 30*l.* ..... 200
Walworth.—11 and 12, Osborne-st., u.t. 29¼ yrs., g.r. 5*l.*, w.r. 62*l.* 8s. ..... 235
Kennington.—14, Sharsted-st., u.t. 53½ yrs., g.r. 6*l.*, w.r. 49*l.* 8s. ..... £210
Clapham.—15, Wurtemberg-st., u.t. 44 yrs., g.r. 5*l.*, e.r. 30*l.* ..... 240
Dulwich.—40 and 42, Croxted-rd., u.t. 44 yrs., g.r. 10*l.*, y.r. 48*l.* and p. ..... 350

March 3.—By FRANCIS DOD & CO.

Clapton.—76, Reighton-rd., u.t. 70 yrs., g.r. 6*l.*, p. ..... 200
Stoke Newington.—43, Bethune-rd., u.t. 64 yrs., g.r. 9*l.*, p. ..... 410
208, Albion-rd., u.t. 62 yrs., g.r. 7*l.* 7s., p. ..... 260
Dalston.—61 and 63, Brownlow-rd., u.t. 33½ yrs., g.r. 10*l.*, w. and e.r. 80*l.* 12s. ..... 200

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly regtal; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

## TERMS OF SUBSCRIPTION.

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## PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

### BRICKS, &c.

| Per 1000 Alongside, in River. | £ | s. | d. |
|---|---|---|---|
| Best Stocks | 1 | 13 | 0 |
| Picked Stocks for Facings | 2 | 10 | 0 |

Per 1000, Delivered at Railway Depôt.

| | £ | s. | d. |
|---|---|---|---|
| Flettons | 1 | 9 | 0 |
| Best Fareham Red | 3 | 12 | 0 |
| Best Red Pressed Ruabon Facing | 5 | 0 | 0 |
| Best Blue Pressed Staffordshire | 3 | 15 | 0 |
| Do. Bullnose | 4 | 0 | 0 |
| Best Stourbridge Fire Bricks | 3 | 14 | 0 |
| GLAZED BRICKS. | | | |
| Best White and Ivory Glazed Stretchers | 10 | 17 | 6 |
| Headers | 10 | 7 | 6 |
| Quoins, Bullnose, and Flats | 14 | 7 | 6 |
| D'ble Stretchers | 16 | 7 | 6 |
| Double Headers | 13 | 7 | 6 |
| One Side and two Ends | 17 | 7 | 6 |
| Two Sides and one End | 18 | 7 | 6 |
| Splays & Squints | 15 | 17 | 6 |
| Best Dipped Salt Glzd. Str'tch'rs | 10 | 17 | 6 |
| Headers | 10 | 7 | 6 |
| Quoins, Bullnose, and Flats | 14 | 7 | 6 |
| D'ble Stretchers | 16 | 7 | 6 |
| Double Headers | 13 | 7 | 6 |
| One Side and two Ends | 17 | 7 | |
| Two Sides and one End | 18 | 7 | 6 |
| Splays & Squints | 15 | 17 | 6 |

Second Quality White and Dipped Salt Glazed, £1 5s. per 1000 less than best.

### BRICKS, &c. (continued).

| | s. | d. | |
|---|---|---|---|
| Thames and Pit Sand | 6 | 9 | per yard, delivered. |
| Thames Ballast | 5 | 3 | " " |
| Best Portland Cement | 20 | 0 | per ton, " |
| Best Ground Blue Lias Lime | 19 | 0 | " " |

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

### STONE.

Per Ft. Cube.

| | s. | d. |
|---|---|---|
| BATH STONE—delivered on road waggons, Paddington Depôt | 1 | 6½ |
| Do. do. delivered on road waggons, Nine Elms Depôt | 1 | 8½ |

| PORTLAND STONE (20 ft. average)— | s. | d. |
|---|---|---|
| Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf | 2 | 1 |
| White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf | 2 | 2½ |

Per Ft. Cube, delivered at Railway Depôt.

| | s. | d. | | s. | d. |
|---|---|---|---|---|---|
| Ancaster in blocks.. | 1 | 10 | Closeburn Red Freestone | 2 | 0 |
| Beer in blocks | 1 | 6 | | | |
| Greenshill in blocks | 1 | 10 | Red Mansfield Freestone | 2 | 4 |
| Darley Dale in blocks | 2 | 4 | Talacre & Gwespyr Stone | 2 | 8 |
| Red Corsehill in blocks | 2 | 3 | | | |

YORK STONE—*Robin Hood Quality.* s. d.
Per Ft. Cube, Delivered at Railway Depôt.

| | |
|---|---|
| Scappled random blocks | 2 10 |

Per Ft. Super., Delivered at Railway Depôt.

| | |
|---|---|
| in. sawn two sides landings to sizes (under 40 ft. super.) | 2 3 |
| 6 in. rubbed two sides ditto, ditto | 2 6 |
| 3 in. sawn two sides slabs (random sizes) | 0 11½ |
| 2 in. to 2½ in. sawn one side slabs (random sizes) | 0 7½ |
| ¼ in. to 2 in. ditto, ditto | 0 6 |

HARD YORK—
Per Ft. Cube, Delivered at Railway Depôt.

| | |
|---|---|
| Scappled random blocks | 3 0 |

Per Ft. Super., Delivered at Railway Depôt.

| | |
|---|---|
| 6 in. sawn two sides landing to sizes (under 40 ft. super.) | 2 8 |
| 6 in. rubbed two sides ditto | 3 0 |
| 3 in. sawn two sides slabs (random sizes) | 1 2 |
| 2 in. self-faced random flags | 0 5 |

### SLATES.

Per 1000 of 1200 at Railway Depôt.

| In. In. | £ | s. | d. | In. In. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| 20×10 best blue Bangor | 13 | 2 | 6 | 20×10 best Eur'ka unfading green | 15 | 17 | 6 |
| 20×12 ditto | 13 | 17 | 6 | 20×12 ditto | 18 | 7 | 6 |
| 20×10 1st quality | | | | 18×10 ditto | 13 | 5 | 0 |
| ditto | 13 | 0 | 0 | 16×8 ditto | 10 | 5 | 0 |
| 20×12 ditto | 13 | 15 | 0 | 20×10 permanent | | | |
| 16×8 ditto | 7 | 5 | 0 | green | 11 | 12 | 6 |
| 22×10 best blue Portmadoc | 12 | 12 | 6 | 18×10 ditto | 9 | 12 | 6 |
| 16×8 ditto | 6 | 12 | 6 | 16×8 ditto | 6 | 12 | 6 |

### TILES.

At Railway Depôt.

| | s. | d. | | s. | d. |
|---|---|---|---|---|---|
| Best plain red roofing (per 1000) | 42 | 0 | Best "Hartshill" brand, plain sand-faced (per 1000) | 50 | 0 |
| Hip and Valley (per doz.) | 3 | 7 | Do. pressed (per 1000) | 47 | 6 |
| Best Broseley (per 1000) | 50 | 0 | Do. Ornamental (per 1000) | 50 | 0 |
| Do. Ornamental (per 1000) | 52 | 6 | Hip (per doz.) | 4 | 0 |
| Hip and Valley (per doz.) | 4 | 0 | Valley (per doz.) | 3 | 6 |
| Best Ruabon red, brown, or brindled (Edw'ds) (per 1000) | 57 | 6 | Staffords. (Hanley) Reds or Brindled (per 1000) | 42 | 6 |
| Do. Ornamental (per 1000) | 60 | 0 | Hand-made sand-faced (per 1000) | 45 | 0 |
| Hip (per doz.) | 4 | 0 | Hip (per doz.) | 4 | 0 |
| Valley (per doz.) | 3 | 0 | Valley (per doz.) | 3 | 6 |

### WOOD.

| BUILDING WOOD. | At per standard. £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in. | 14 | 0 | 0 | ... | 15 | 10 | 0 |
| Deals: best 3 by 9 | 13 | 10 | 0 | ... | 14 | 10 | 0 |
| Battens: best 2½ in. by 7 in. and 8in., and 3 in. by 7 in. and 8 in. | 11 | 10 | 0 | ... | 12 | 10 | 0 |
| Battens: best 2½ by 6 and 3 by 6 | 0 | 10 | 0 | | less than 7 in. and 8 in. | | |
| Deals: seconds | 1 | 0 | 0 | less than best. | | | |
| Battens: seconds | 0 | 10 | 0 | " | | " | |
| 2 in. by in. and 2 in. by 6 in. | 9 | 10 | 0 | ... | 10 | 10 | 0 |
| 2 in. by 4½ in. and 2 in. by 5 in. | 9 | 0 | 0 | ... | 10 | 0 | 0 |
| Foreign Sawn Boards— | | | | | | | |
| 1 in. and 1½ in. by 7 in. | 0 | 10 | 0 | | more than battens. | | |
| ½ in. | 1 | 0 | 0 | | " | | |
| Fir timber: best middling Danzig or Memel (average specification) | At per load of 50 ft. 5 | 0 | 0 | ... | 5 | 10 | 0 |
| Seconds | 4 | 10 | 0 | ... | 5 | 0 | 0 |
| Small timber (8 in. to 10 in.) | 3 | 17 | 6 | ... | 4 | 0 | 0 |
| Small timber (6 in. to 8 in.) | 3 | 5 | 0 | ... | 3 | 10 | 0 |
| Swedish balks | 2 | 12 | 6 | ... | 3 | 0 | 0 |
| Pitch-pine timber (30 ft. average) | 4 | 10 | 0 | ... | 5 | 5 | 0 |
| JOINERS' WOOD. | At per standard. | | | | | | |
| White Sea: first yellow deals, 3 in. by 11 in. | 24 | 10 | 0 | ... | 25 | 10 | 0 |
| 3 in. by 9 in. | 22 | 10 | 0 | ... | 23 | 10 | 0 |
| Battens 2½ in. and 3 in. by 7 in. | 17 | 0 | 0 | ... | 18 | 0 | 0 |
| Second yellow deals, 3in. by 11in. | 19 | 0 | 0 | ... | 20 | 0 | 0 |
| " 3 in. by 9 in. | 18 | 0 | 0 | ... | 19 | 10 | 0 |
| Battens, 2½ in. and 3in. by 7 in. | 14 | 0 | 0 | ... | 15 | 0 | 0 |
| Third yellow deals, 3 in. by 11 in. and 9 in. | 14 | 0 | 0 | ... | 15 | 0 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 11 | 10 | 0 | ... | 12 | 10 | 0 |
| Petersburg: first yellow deals, 3 in. by 11 in. | 21 | 10 | 0 | ... | 22 | 10 | 0 |
| Do. 3 in. by 9 in. | 18 | 10 | 0 | ... | 19 | 10 | 0 |
| Battens | 14 | 0 | 0 | ... | 15 | 0 | 0 |
| Second yellow deals, 3 in. by 11 in. | 16 | 10 | 0 | ... | 17 | 10 | 0 |
| Do. 3 in. by 9 in. | 15 | 0 | 0 | ... | 16 | 0 | 0 |
| Battens | 11 | 10 | 0 | ... | 12 | 10 | 0 |
| Third yellow deals, 3in. by 11 in. | 13 | 10 | 0 | ... | 14 | 10 | 0 |
| Do. 3 in. by 9 in. | 13 | 0 | 0 | ... | 14 | 0 | 0 |
| Battens | 10 | 10 | 0 | ... | 11 | 0 | 0 |

### WOOD (continued).

| JOINERS' WOOD (continued)— | At per standard. £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| White Sea and Petersburg— | | | | | | | |
| First white deals, 3 in. by 11 in. | 15 | 0 | 0 | ... | 16 | 0 | 0 |
| " " 3 in. by 9 in. | 14 | 0 | 0 | ... | 14 | 10 | 0 |
| Battens | 11 | 10 | 0 | ... | 12 | 10 | 0 |
| Second white deals, 3in. by 11in. | 14 | 0 | 0 | ... | 15 | 0 | 0 |
| " " 3 in. by 9 in. | 13 | 0 | 0 | ... | 14 | 0 | 0 |
| Battens | 10 | 10 | 0 | ... | 11 | 0 | 0 |
| Pitch-pine: deals | 19 | 0 | 0 | ... | 21 | 0 | 0 |
| Under 2 in. thick extra | 0 | 10 | 0 | ... | 1 | 0 | 0 |
| Yellow Pine—First, regular sizes | 44 | 0 | 0 | upwards. | | | |
| Oddments | 32 | 0 | 0 | " | | | |
| Seconds, regular sizes | 31 | 0 | 0 | " | | | |
| Oddments | 28 | 0 | 0 | " | | | |
| Kauri Pine—Planks, per ft. cube. | 0 | 3 | 6 | ... | 0 | 5 | 0 |
| Danzig and Stettin Oak Logs— | | | | | | | |
| Large, per ft. cube | 0 | 3 | 0 | ... | 0 | 3 | 9 |
| Small " " | 0 | 2 | 6 | ... | 0 | 2 | 6 |
| Wainscot Oak Logs, per ft. cube | 0 | 5 | 6 | ... | 0 | 6 | 0 |
| Dry Wainscot Oak, per ft. sup. as inch | 0 | 0 | 8½ | ... | 0 | 0 | 9½ |
| ¼ in. do. do. | 0 | 0 | 7 | ... | | — | |
| Dry Mahogany—Honduras, Tabasco, per ft. super. as inch.. | 0 | 0 | 10 | ... | 0 | 1 | 1 |
| Selected, Figury, per ft. super. as inch | 0 | 1 | 6 | ... | 0 | 2 | 6 |
| Dry Walnut, American, per ft. super. as inch | 0 | 0 | 10 | ... | 0 | 1 | 0 |
| Teak, per load | 18 | 0 | 0 | ... | 22 | 0 | 0 |
| American Whitewood planks, per ft. cube | 0 | 4 | 0 | ... | 0 | 5 | 0 |
| Prepared Flooring, etc.— | Per square. | | | | | | |
| 1 in. by 7 in. yellow, planed and shot | 0 | 13 | 6 | ... | 0 | 17 | 0 |
| 1 in. by 7 in. yellow, planed and matched | 0 | 14 | 0 | ... | 0 | 18 | 0 |
| 1¼ in. by 7 in. yellow, planed and matched | 0 | 16 | 0 | ... | 1 | 0 | 0 |
| 1 in. by 7 in. white, planed and shot | 0 | 12 | 0 | ... | 0 | 14 | 6 |
| 1 in. by 7 in. white, planed and matched | 0 | 12 | 6 | ... | 0 | 15 | 0 |
| 1¼ in. by 7 in. white, planed and matched | 0 | 15 | 0 | ... | 0 | 16 | 6 |
| ¾ in. by 7 in. yellow, matched and beaded or V-jointed birds. | 0 | 11 | 0 | ... | 0 | 13 | 6 |
| 1 in. by 7 in. " " | 0 | 14 | 0 | ... | 0 | 18 | 6 |
| ¾ in. by 7 in. white " " | 0 | 10 | 0 | ... | 0 | 11 | 0 |
| 1 in. by 7 in. " " | 0 | 12 | 9 | ... | 0 | 15 | 0 |

6 in. at 6d. to 9d. per square less than 7 in.

### JOISTS, GIRDERS, &c.

| | In London, or delivered Railway Vans, per ton. £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Rolled Steel Joists, ordinary sections | 7 | 0 | 0 | ... | 7 | 10 | 0 |
| Compound Girders, ordinary sections | 9 | 0 | 0 | ... | 10 | 0 | 0 |
| Steel Compound Stanchions | 11 | 0 | 0 | ... | 12 | 0 | 0 |
| Angles, Tees, and Channels, ordinary sections | 9 | 0 | 0 | ... | 10 | 0 | 0 |
| Flitch Plates | 9 | 0 | 0 | ... | 9 | 10 | 0 |
| Cast Iron Columns & Stanchions, including ordinary patterns | 7 | 10 | 0 | ... | 8 | 10 | 0 |

### METALS.

| | Per ton, in London. £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| IRON— | | | | | | | |
| Common Bars | 8 | 10 | 0 | ... | 9 | 0 | 0 |
| Staffordshire Crown Bars, good merchant quality | 8 | 15 | 0 | ... | 9 | 5 | 0 |
| Staffordshire "Marked Bars" | 10 | 10 | 0 | ... | — | | |
| Mild Steel Bars | 8 | 15 | 0 | ... | 9 | 5 | 0 |
| Hoop Iron, basis price | 9 | 5 | 0 | ... | 9 | 10 | 0 |
| " " Galvanised | 17 | 0 | 0 | ... | — | | |
| (*And upwards, according to size and gauge.) | | | | | | | |
| Sheet Iron Black— | | | | | | | |
| Ordinary sizes to 20 g. | 9 | 15 | 0 | ... | — | | |
| " " 24 g. | 10 | 15 | 0 | ... | — | | |
| " " 26 g. | 12 | 5 | 0 | ... | — | | |
| Sheet Iron, Galvanised, flat, ordinary quality— | | | | | | | |
| Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g. | 15 | 0 | 0 | ... | — | | |
| Ordinary sizes to 22 g. and 24 g. | 15 | 10 | 0 | ... | — | | |
| " " 26 g. | 16 | 10 | 0 | ... | — | | |
| Sheet Iron, Galvanised, flat, best quality— | | | | | | | |
| Ordinary sizes to 20 g. | 18 | 0 | 0 | ... | — | | |
| " " 22 g. and 24 g. | 18 | 10 | 0 | ... | — | | |
| " " 26 g. | 20 | 0 | 0 | ... | — | | |
| Galvanised Corrugated Sheets— | | | | | | | |
| Ordinary sizes, 6ft. to 8ft. 20 g. | 14 | 10 | 0 | ... | — | | |
| " " 22 g. and 24 g. | 14 | 15 | 0 | ... | — | | |
| " " 26 g. | 16 | 5 | 0 | ... | — | | |
| Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker | 12 | 0 | 0 | ... | — | | |
| Best Soft Steel Sheets, 2 g. & 24 g. | 13 | 0 | 0 | ... | — | | |
| " " " 26 g. | 15 | 0 | 0 | ... | — | | |
| Cut Nails, 3 in. to 6 in. | 10 | 10 | 0 | ... | 11 | 0 | 0 |

(Under 3 in., usual trade extras.)

### LEAD, &c.

| | Per ton, in London. £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| LEAD—Sheet, English, 4lb. and up | 16 | 12 | 6 | ... | — | | |
| Pipe in coils | 17 | 2 | 6 | ... | — | | |
| Soil pipe | 20 | 2 | 6 | ... | — | | |
| Compo pipe | 20 | 2 | 6 | ... | — | | |
| ZINC—Sheet— | In casks of 10 cwt. | | | | | | |
| Vielle Montagne | 31 | 10 | 0 | ... | — | | |
| Silesian | 31 | 5 | 0 | ... | — | | |
| Zinc, in bundles, 1s. per cwt. extra. | | | | | | | |
| COPPER— | | | | | | | |
| Strong Sheet per lb. | 0 | 1 | 0 | ... | — | | |
| Thin " " | 0 | 1 | 1 | ... | — | | |
| Copper nails " | 0 | 0 | 10 | ... | — | | |
| Copper wire " | 0 | 0 | 10 | ... | — | | |
| BRASS— | | | | | | | |
| Strong Sheet " | 0 | 0 | 11 | ... | — | | |
| Thin " | 0 | 1 | 0 | ... | — | | |
| TIN—English Ingots " | 0 | 1 | 11 | ... | — | | |
| SOLDER—Plumbers' " | 0 | 0 | 8½ | ... | — | | |
| Tinmen's " | 0 | 0 | 11 | ... | — | | |
| Blowpipe " | 0 | 1 | 2 | ... | — | | |

### ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

Per Ft., Delivered.

| | | | |
|---|---|---|---|
| 15 oz. thirds | 2½d. | 26 oz. fourths | 3½d. |
| " fourths | 1½d. | 32 oz. thirds | 5½d. |
| 21 oz. thirds | 3½d. | " fourths | 4½d. |
| " fourths | 2½d. | Fluted Sheet, 15 oz. | 3½d. |
| 23 oz. thirds | 4½d. | " 21 oz. | 4½d. |

### ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

Per Ft., Delivered.

| | | | |
|---|---|---|---|
| ⅛ Hartley's | 2d. | Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white | 3½d. |
| ¼ " | 2½d. | | |
| ⅜ " | 2½d. | Ditto, tinted | 5d. |

### OILS, &c.

| | | £ | s. | d. |
|---|---|---|---|---|
| Raw Linseed Oil in pipes | per gallon | 0 | 4 | 2 |
| " " " in barrels | " | 0 | 4 | 3 |
| " " " in drums | " | 0 | 4 | 5 |
| Boiled " " in barrels | " | 0 | 4 | 5 |
| " " " in drums | " | 0 | 4 | 8 |
| Turpentine in barrels | " | 0 | 5 | 1 |
| " in drums | " | 0 | 5 | 3 |
| Genuine, Ground English White Lead, | per ton | 21 | 10 | 0 |
| Red Lead, Dry | " | 20 | 0 | 0 |
| Best Linseed Oil Putty | per cwt. | 0 | 11 | 6 |
| Stockholm Tar | per barrel | 1 | 12 | 0 |

### VARNISHES, &c.

| | Per gallon. £ | s. | d. |
|---|---|---|---|
| Fine Pale Oak Varnish | 0 | 8 | 0 |
| Pale Copal Oak | 0 | 10 | 6 |
| Superfine Pale Elastic Oak | 0 | 12 | 6 |
| Fine Extra Hard Church Oak | 0 | 10 | 0 |
| Superfine Hard-drying Oak, for seats of Churches | 0 | 14 | 6 |
| Fine Elastic Carriage | 0 | 12 | 0 |
| Superfine Pale Elastic Carriage | 0 | 16 | 0 |
| Fine Pale Maple | 0 | 10 | 0 |
| Finest Pale Durable Copal | 0 | 18 | 0 |
| Extra Pale French Oil | 1 | 1 | 0 |
| Eggshell Flating Varnish | 0 | 18 | 0 |
| White Pale Enamel | 1 | 4 | 0 |
| Extra Pale Paper | 0 | 12 | 0 |
| Best Japan Gold Size | 0 | 10 | 6 |
| Best Black Japan | 0 | 16 | 0 |
| Oak and Mahogany Stain | 0 | 9 | 0 |
| Brunswick Black | 0 | 8 | 0 |
| Berlin Black | 0 | 16 | 0 |
| Knotting | 0 | 10 | 9 |
| French and Brush Polish | 0 | 10 | 6 |

## TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and not to the Editor.

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## TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 a.m. on *Thursday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ARMAGH.—For renovation of the Market House, for the Urban District Council. Mr. John Caffrey, Borough Surveyor, City Hall, Armagh:—

| | | | |
|---|---|---|---|
| T. Collen | £2,237 10 | I. Copeland‡ | £2,118 0 |
| R. Cullen, Portadown* | 2,300 0 | | |

‡ Informal.

BILTON.—For supplying and laying water mains, for Rugby Rural District Council. Mr. T. W. Willard, Surveyor to the Council, Rugby:—

| | |
|---|---|
| T. H. Craddock, Rugby* | £241 16 0 |

[Five others.]

BIRMINGHAM.—For erecting a park shelter in Calthridge Park, for King's Norton and Northfield Urban District Council. Mr. Ambrose W. Cross, Engineer and Surveyor to the Council:—

| | | | |
|---|---|---|---|
| A. J. Bowden | £530 3 3 | Pearce & Son | £328 14 0 |
| Harris & Son | 490 0 0 | W. T. Ingram & Son | 317 14 0 |
| H. Dorse | 463 5 0 | J. Dawson, King's Heath* | 315 5 0 |
| Jamieson & Gosage | 338 12 2 | | |
| T. W. Halward & Son | 327 0 0 | | |

BRENTFORD.—For renovations to the Baptist Chapel, North-road, Brentford:—

| | |
|---|---|
| H. Fowler, Chiswick* | £130 18 6 |

**CHELTENHAM.**—For erection of recreation block at the Phthisical Sanatorium, for the City of Birmingham. Messrs. "W. H. Ward," Paradise-street, Birmingham, architects:—

*Contract No. 1.*

| | | | |
|---|---|---|---|
| S. B. Dix | £753 | A. C. Billings & Sons, Ltd. | £534 |
| Collins & Godfrey | 527 | | |
| S. F. Swift | 525 | | |

*Contract No. 2.*

| | | | |
|---|---|---|---|
| S. B. Dix | £725 0 | A. C. Billings & Sons, Ltd. | £496 15 |
| Collins & Godfrey | 511 1 | | |
| S. F. Swift | 504 0 | | |

**COBRIDGE.**—For additions to the Home of the Little Sisters of the Poor. Messrs. Scrivener & Sons, architects, etc., Howard-place, Hanley:—

| | | | |
|---|---|---|---|
| W. Cooke | £7,145 | G. Ellis | £6,630 |
| Robinson & Cope | 7,120 | G. M. Sambrook | 6,610 |
| Cornes & Son | 6,900 | Tompkinson & Bettelley | 6,493 |
| A. Hopkins | 6,899 | S. Wilton, jun. | 6,458 |
| J. Grant, Cobridge, Stoke-on-Trent* | 6,688 | Thomas & Son | 6,445 |
| J. H. Broadhurst | 6,650 | H. Wardle | 6,440 |
| T. Godwin | 6,648 | S. Heath | 6,172 |

**CLACTON.**—For painting police station. Mr. F. Whitmore, County Architect, Chelmsford:—

| | | | |
|---|---|---|---|
| W. Ellis & Co. | £129 10 0 | S. F. Bailey | £104 15 6 |
| Church & Richardson | 111 6 0 | F. Taylor | 104 6 7 |
| A. R. Canler | 110 0 0 | J. W. Trudgett | 99 7 0 |
| W. H. Bray | 107 1 0 | W. Rogers | 98 10 9 |
| | | W. H. Eaves | 98 10 0 |

**CROYDON.**—For the erection of a lecture hall in Whitgift-street, Croydon. Mr. Gerald E. Burgess, architect, 1, Station-road, Swanley, Kent:—

| | | | |
|---|---|---|---|
| Y. & W. Page | £762 0 | W. Smith & Sons | £643 10 |
| G. Everitt | 707 10 | W. F. Blay, Ltd., Dartford, Kent* | 639 0 |

**FLUSH HALL (Newtownards).**—For erecting printworks, for the Ulster Printworks, Ltd. Mr. Ernest L. Woods, C.E., Bangor. Quantities by Mr. S. C. Hunter, Belfast:—

| | | | |
|---|---|---|---|
| J. Hanna & Son | £14,900 | J. Hogg & Son | £11,955 |
| J. Henry & Son | 13,432 | J. Graham | 11,669 |
| J. Colville | 13,393 | W. J. Campbell & Son | 11,528 |
| J. & W. Stewart | 13,250 | Thornbury Bros. | 11,312 |
| J. & R. Thompson | 13,200 | McIntyre Bros. | 11,254 |
| H. & J. Martin | 12,950 | McRoberts & Henry | 11,252 |
| H. Keith | 12,700 | R. Corry | 10,975 |
| A. Gordon & Son | 12,580 | W. Dowling, Belfast* | 10,661 |
| Courtney & Co. | 12,293 | | |
| T. Paisley | 12,084 | | |
| McLaughlin & Harvey | 11,998 | | |

**FYFIELD** (near Ongar).—For alterations and additions to the Industrial and Truants' School, Fyfield, Essex, for the Education Committee of the West Ham Borough Council. Messrs. William & John H. Jacques, Architect, 2, Fen-court, Fenchurch-street, E.C. Quantities by Messrs. R. L. Curtis & Sons:—

| | | | |
|---|---|---|---|
| Brand, Pettitt, & Co. | £2,763 | J. & M. Patrick | £2,144 |
| A. Webb | 2,349 | Woollaston & Co. | 2,130 |
| Battley, Sons, & Holness | 2,327 | A. E. Symes | 2,116 |
| P. R. Paul | 2,291 | H. C. Horswill | 1,989 |
| R. A. Lowe & Co. | 2,285 | Clark & Sons | 1,953 |
| W. Lawrence & Son | 2,274 | F. J. Coxhead, Leytonstone* | 1,949 |
| Fitch & Cox | 2,181 | | |

**HAVERSHAM.**—For erecting cottages and new farm buildings at Pike's Farm, for Bucks County Council. Mr. W. J. Pulford, Architect, County Hall, Aylesbury:—

| | | | |
|---|---|---|---|
| E. Green | £961 0 0 | Cowley & Son, Stony Stratford, Bucks* | £750 2 6 |
| Cripps & Sons | 897 0 0 | | |
| W. Higgins | 849 0 0 | | |
| D. Meakins | 817 19 8 | | |

**HAVERSHAM.**—For alterations and additions to cottage and farm buildings, for Bucks County Council. Mr. W. J. Pulford, Architect, County Hall, Aylesbury:—

| | | | |
|---|---|---|---|
| E. Green | £427 0 0 | W. Higgins | £374 0 0 |
| Cripps & Sons | 422 17 0 | D. Meakins, Stony Stratford* | 340 7 3 |
| Cowley & Son | 406 6 3 | | |

**HAVERSHAM.**—For alterations and additions to farmhouse and farm buildings, for Bucks County Council. Mr. W. J. Pulford, Architect, County Hall, Aylesbury:—

| | | | |
|---|---|---|---|
| Cripps & Sons | £742 10 0 | D. Meakins, Stony Stratford* | £486 6 7 |
| E. Green | 663 0 0 | | |
| Cowley & Son | 565 0 0 | | |
| W. Higgins | 507 0 0 | | |

**LEIGH** (near Tonbridge).—For carrying out sewage disposal works, for the Sevenoaks Rural District Council. Mr. Thomas Hennell, Engineer, Victoria-street, S.W.:—

| | |
|---|---|
| A. G. Osenton | £1,317 6 9 |
| E. Wallis | 1,317 0 0 |
| L. Lown & Co. | 1,290 0 0 |
| W. H. Wheeler & Co., Ltd. | 1,268 11 0 |
| Martin & Co. | 1,258 0 0 |
| E. Punnett & Sons | 1,229 0 0 |
| G. Bell & Co., Ltd. | 1,216 0 0 |
| Hope Constable | 1,195 5 0 |
| T. Wood & Sons, Ltd | 1,194 5 6 |
| F. H. Bingham | 1,098 6 1½ |
| W. T. Burrows, 27, Hedley-street, Maidstone* | 927 0 0 |

**LONDON.**—For alterations to Caxton Hall, for the Westminster City Council:—

| | | | |
|---|---|---|---|
| T. Coulthard | £218 | W. Eyre | £146 |
| Love & Co. | 158 | J. R. Sims, 60, Horseferry-road* | 144 |
| Wright & Son | 150 | | |

**MAIDENHEAD.**—For alterations and additions to No. 74, High-street, for Messrs. Neve Bros. Mr. H. Stanton Webber, F.S.I., architect, 23, Queen-street, Maidenhead. Quantities by architect:—

| | | | |
|---|---|---|---|
| W. Partlo | £464 15 0 | J. Vevers | £431 3 5 |
| Cooper & Sons | 458 0 0 | W. Creed* | 427 0 0 |
| Cox & Sons | 433 0 0 | | |

[Architect's estimate, £420.]

**MIDDLESTOWN.**—For the erection of six dwelling-houses, Sandy-lane, Middlestown, for Messrs. Waterhouse & Rickton. Mr. Fred. Scatchard, architect and surveyor, Castleford:—

| | |
|---|---|
| *Excavators, Bk. and Mason:* Clarke & Son, Middletown* | £620 0 |
| *Carpenter and Joiner:* H. Cressey, Wakefield* | 279 10 |
| *Tilers:* Brear & Son, Dewsbury* | 80 0 |
| *Plumbers and Glaziers:* Fisk, Wakefield* | 108 0 |
| *Plasterer:* G. Naylor, Dewsbury* | 90 0 |
| *Painter:* T. Watson, Castleford* | 18 10 |
| Total | 1,205 0 |

**SOUTHMINSTER.**—For painting police station. Mr. F. Whitmore, County Architect, Chelmsford:—

| | | | |
|---|---|---|---|
| W. Rogers | £112 0 | Trussell & Braham | £77 14 |
| C. H. Camping & Sons | 80 0 | W. Stammers | 77 10 |

**SPRINGFIELD.**—For painting Old-court, Springfield. Mr. F. Whitmore, County Architect, Chelmsford:—

| | | | |
|---|---|---|---|
| Eglin & Co. | £110 11 | Hawkins & Ward | £69 10 |
| Choat & Son | 85 0 | J. W. Trudgett | 69 0 |
| T. J. Bailey | 70 0 | W. E. Wisbey | 65 0 |

**SWANLEY.**—For the erection of a residence, for Mr. R. J. Stone, upon Moultan Hill, Swanley. Mr. Gerald E. Burgess, architect, 1, Station-road, Swanley Junction, Kent:—

| | | | |
|---|---|---|---|
| Blay | £520 0 | Buckingham | £407 10 |
| Ellingham | 500 0 | Walden | 390 0 |
| Fox | 455 7 | Howard | 385 0 |
| Shuter | 450 0 | | |

*Amended Tenders.*

| | | | |
|---|---|---|---|
| Buckingham | £399 0 | Howard, Orpington* | £286 10 |
| Walden | 395 0 | | |

**WINSCOMBE.**—For alterations, etc., to the Baptist and Congregational Chapel. Mr. Alfred Harford, architect and surveyor, Bristol. Quantities by the architect:—

| | | | |
|---|---|---|---|
| A. H. Curtis | £783 15 3 | E. C. Harvey | £491 2 6 |
| S. Rodway | 652 0 0 | I. Ford & Sons, Cheddar* | 485 0 0 |
| F. Wren | 598 17 2 | | |
| W. Hendey | 559 19 0 | | |


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